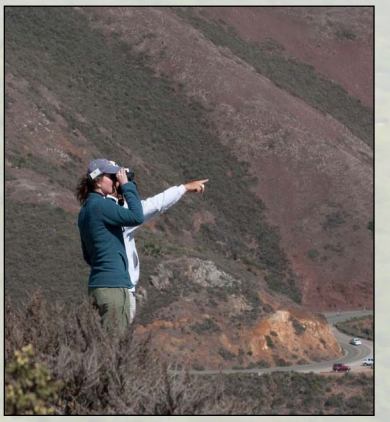
National Park Service
U.S. Department of the Interior

Golden Gate National Recreation Area

California



Final Dog Management Plan / Environmental Impact Statement

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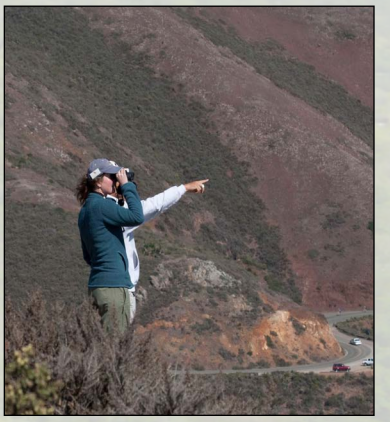

Final Dog Management Plan / Environmental Impact Statement

December 2016
Volume 1

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
FINAL DOG MANAGEMENT PLAN / ENVIRONMENTAL IMPACT STATEMENT

GOLDEN GATE NATIONAL RECREATION AREA, SAN FRANCISCO, CA

Lead Agency: National Park Service (NPS), U.S. Department of the Interior

This Final Dog Management Plan / Environmental Impact Statement (final plan/EIS) was prepared for the Golden Gate National Recreation Area (GGNRA or park), which is comprised of multiple sites distributed across San Francisco, Marin, and San Mateo counties. This final plan/EIS describes six alternatives at 22 sites, including the preferred alternative (alternative F), for the management of dog walking activities at GGNRA, and details the resources that would be affected by the alternatives and the environmental consequences of implementing these alternatives. Because of the diversity of resources and the variety of use patterns across these park sites, a site-specific approach to analyzing the alternatives was adopted, resulting in a preferred alternative for each site.

The purpose of this action is to determine the manner and extent of dog use in appropriate areas of the park. Action is needed because GGNRA resources and values, as defined by the park's enabling legislation and the NPS *Organic Act,* could be compromised to the extent that, without action, these resources and values in some areas of the park might not be available for enjoyment by future generations. Additionally, a dog management policy inconsistent with NPS regulations and increased public expectations for use of the park for dog recreation have resulted in controversy, litigation, and compromised visitor and employee safety, affecting visitor experience and resulting in resource degradation. These conflicts will likely escalate if not addressed in a comprehensive plan/EIS.

Under alternative A (no action), current dog walking practices would continue. Alternative B would bring the park into alignment with the NPS-wide leash regulation (on-leash dog walking only). Alternative C would emphasize multiple use, and balance use and provide a variety of visitor experiences by county (no dogs, on-leash dog walking, and dog walking under voice and sight control areas (VSCAs)). Alternative D would be the most protective of resources and visitor safety. Alternative E would provide dog walkers the greatest level of access per area (no dogs, on-leash dog walking, and dog walking under voice and sight control in VSCAs). Alternative D is the environmentally preferable alternative for all areas except for Ft. Funston and Upper and Lower Fort Mason, where alternative B is the environmentally preferable alternative. Alternative F is the NPS preferred alternative, and was altered, in part, in response to public comments received on the draft plan/EIS, the draft plan/ supplemental EIS, and the proposed rule. Alternative F provides a variety of visitor experiences (no dogs, on-leash dog walking, and dog walking under voice and sight control in VSCAs) as well as protection of natural resources and visitor safety.

The final plan/EIS is available on the NPS Planning, Environment, and Public Comment (PEPC) website at http://parkplanning.nps.gov/dogplan. A 30-day "no-action" period will begin on the date the U.S. Environmental Protection Agency publishes a Notice of Availability of the final plan/EIS in the Federal Register. Following the 30-day period, the alternative or actions constituting the approved plan will be documented in a Record of Decision that will be signed by the Pacific West Regional Director. A final rule will then be issued. For further information regarding this document, please visit http://parkplanning.nps.gov/dogplan or contact

James Milestone, Acting General Superintendent
Golden Gate National Recreation Area
Building 201, Fort Mason
San Francisco, CA 94123-0022
(415) 561-4720

National Park Service
U.S. Department of the Interior

Golden Gate National Recreation Area
San Francisco, CA

GOLDEN GATE NATIONAL RECREATION AREA

FINAL DOG MANAGEMENT PLAN / ENVIRONMENTAL IMPACT STATEMENT

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EXECUTIVE SUMMARY

PURPOSE AND NEED FOR ACTION

The *National Environmental Policy Act of 1969* (NEPA) requires an environmental impact statement (EIS) to briefly provide a statement of purpose and need for the action the agency is proposing. The purpose states the goal the park must achieve by taking action and the need for action summarizes why action is required.

Purpose for Taking Action

The purpose of the Final Dog Management Plan / Environmental Impact Statement (final plan/EIS) is to determine the manner and extent of dog use in appropriate areas of the park. This final plan/EIS would promote the following objectives:

- Provide a clear, enforceable dog management policy
- Preserve and protect natural and cultural resources and natural processes
- Provide a variety of visitor experiences
- Improve visitor and employee safety
- Reduce user conflicts
- Maintain park resources and values for future generations.

Need for Action

A plan/EIS is needed because Golden Gate National Recreation Area (GGNRA or park) resources and values, as defined by the park's enabling legislation and the National Park Service (NPS) *Organic Act*, could be compromised to the extent that, without action, those resources and values in some areas of the park might not be available for enjoyment by future generations. Additionally, a dog management policy inconsistent with NPS regulations and increased public expectations for use of the park for dog recreation have resulted in controversy, litigation, and compromised visitor and employee safety, affecting visitor experience and resulting in resource degradation. The conflicts will likely escalate if not addressed in a comprehensive plan/EIS.

PURPOSE OF GOLDEN GATE NATIONAL RECREATION AREA

The purpose of GGNRA is to offer national park experiences to a large and diverse urban population while preserving and interpreting its outstanding natural, historic, scenic, and recreational values.

OBJECTIVES

Objectives are specific goals that describe what GGNRA intends to accomplish by preparing a plan/EIS. These objectives come from a variety of sources, including NPS management policies, laws, and regulations. The objectives help develop alternatives for evaluation and public review. The internal scoping process yielded the following specific objectives for this planning process:

Visitor Experience and Safety

- Minimize conflicts related to dog use by providing a variety of safe, high-quality visitor use experiences, including areas where dogs are allowed.

Law Enforcement / Compliance with Dog Rules, and Park Operations

- Maximize dog walker compliance with clear, enforceable parameters in order to improve park operations and use of staff resources in managing dog walking.

Park Operations

- Provide adaptability and flexibility so that information gathered from monitoring can be used in future decision making based on estimated outcomes, including in new park areas.
- Ensure a safe and healthy working environment for park staff.
- Evaluate commercial dog walking, and if allowed, create and implement an enforceable policy.

Natural Resources

- Protect native wildlife and their habitat (including sensitive species and their habitat, and federally or state listed, unique, or rare species) from detrimental effects of dog use, including harassment or disturbance by dogs.
- Minimize degradation of vegetation, soil and water resources by dog use.
- Preserve opportunities for future natural resource restoration and enhancement.

Cultural Resources

- Preserve opportunities for future cultural resource restoration and enhancement.
- Protect cultural resources from the detrimental effects of dog use.

Education

- Build community support for the plan to maximize management of dog walking use.
- Increase public understanding of NPS policies.

BACKGROUND OF DOG MANAGEMENT AT GGNRA

The history of dog walking in some areas of GGNRA began prior to the establishment of the park, when dog walking, including off-leash dog walking, occurred informally at sites under varied jurisdictions in San Francisco and Marin counties. Some of the lands designated as part of the new national recreation area had been formerly owned and managed by other public entities, and practices prohibited in national park system units, such as allowing dogs off leash, had been sanctioned or allowed on those lands. In the first years after GGNRA was established in 1972, those practices continued largely uninterrupted, although park staff recognized and documented issues arising from the practice during the early years of the park's existence.

In 1978, due to public requests from dog walkers, the Commission developed a pet policy for the park. In 1979, they formally recommended the policy, which has since been known as the "1979 Pet Policy"

(appendix A), to the park Superintendent. The 1979 Pet Policy, developed with input from park staff, provided general guidance for dog walking and recommended locations for both on-leash dog walking and off leash or "voice control" dog walking in lands owned and managed by GGNRA, although this recommendation did not abide by the federal regulation regarding dog walking in national parks (36 CFR 2.15). The Code of Federal Regulations (CFR) is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.

Since the 1990s, the San Francisco Bay Area population and overall use of GGNRA park sites have increased, as have the number of private and commercial dog walkers. At the same time, the number of conflicts between park users with and without dogs began to rise, as did the fear of dogs and dog bites or attacks. The hours devoted by park staff to manage these conflicts, rescue dogs and owners, dispose of dog waste, educate the public on dog walking policies and regulations at each park site, and enforce regulations also increased. In addition, since the establishment of the park, several species with habitat in GGNRA areas used by dog walkers have been listed as threatened, endangered, or special-status species requiring special protection.

Underscoring the increasing conflict over off-leash dog use, dog walking groups filed a lawsuit against the NPS in March 2000 when GGNRA closed part of Fort Funston to the public to provide resource protection and restoration. The federal district court held that the NPS had not adequately obtained public input on the proposed closure as required by 36 CFR 1.5. Upon completion of public involvement efforts, the court agreed that GGNRA had fully complied with required sections of 36 CFR 1.5 and that the need for "prompt protective action" was "genuine." The park closed the original 12 acres in February 2001, per the GGNRA Compendium. During this period, it was clarified by the Department of Justice, U.S. Attorney, and the Department of the Interior Solicitor Offices that the voice control policy then in effect at Fort Funston and other locations in the park was contrary to NPS regulations.

In a public meeting in January 2001, the Commission acknowledged that the voice control policy was contrary to 36 CFR 2.15(a)(2), prohibiting off-leash dogs in national parks, and therefore illegal and unenforceable. In the year following the Commission meeting, park staff attempted to facilitate the transition into compliance with 36 CFR 2.15(a)(2) through educational outreach, new signs, and law enforcement actions including verbal and written warnings. When these measures failed to bring about compliance with the regulation, law enforcement staff issued citations in addition to warnings. During this time, conflicts between dog walkers and park staff increased significantly.

The June 2, 2005, decision by U.S. District Court for Northern California Judge Alsup (*U.S. vs. Barley* 405 F.Supp.2d 1121 (N.D. Cal. 2005)) held that GGNRA cannot enforce the NPS-wide regulation requiring on-leash walking of pets (36 CFR 2.15(a)(2)) in areas that were included in the 1979 Pet Policy until notice and comment rulemaking under Section 1.5(b) is completed. In response, GGNRA revised its enforcement position to reflect that court decision, limiting enforcement of the NPS leash regulation to areas that were not included in the 1979 Pet Policy or that were identified as on-leash dog walking areas in the 1979 Pet Policy. In addition to the 2005 court decision, current dog management at GGNRA is guided by the GGNRA Compendium and the special regulation for protection of western snowy plovers (*Charadrius alexandrinus nivosus*).

A draft plan/EIS was released on January 14, 2011, and public comment was open until May 30, 2011, (136 days). As a result of substantive public comments, NPS determined that a number of changes to the draft plan/EIS would be necessary to be responsive to public comment. These changes include the following:

- the addition of new data (including additional law enforcement and visitor use data)

- new references
- additional Federal Rehabilitation Act (FRA) – Section 504 information
- changes to the impacts analysis (including additional analysis of potential redistributive effects of opening/closing areas to dog walking)
- changes to the compliance-based management strategy (now referred to as the monitoring-based management program) by including natural and cultural resource monitoring and removing automatic triggers and restrictions
- evaluation of additional fencing as a method to minimize dog walking impacts
- relatively minor changes to each site specific preferred alternative.

Additionally, a site recently transferred to GGNRA, Rancho Corral de Tierra (Rancho), was added to the park sites specifically addressed by the plan and a range of reasonable alternatives for the site was developed and is analyzed in the draft plan/ supplement al environmental impact statement (SEIS). When significant new information or substantial changes to the proposed action occur that are relevant to environmental concerns, an SEIS should be prepared (Council on Environmental Quality (CEQ) NEPA Regulations, 40 CFR 1502.9(c)). Preparing a draft plan/SEIS gave the NPS the opportunity to hear comment from the public on the new information before NPS issued the Notice of Proposed Rulemaking, and prior to finalizing the plan/EIS, record of decision, and final rule.

The draft plan/SEIS was released on September 6, 2013, and the public was able to comment on the draft plan/SEIS through February 18, 2014. Following review and analysis of comments on the draft plan/SEIS, the NPS prepared a proposed rule for dog walking in GGNRA. A Notice of Proposed Rulemaking was published in the Federal Register on February 24, 2016, for special regulations for dog management in GGNRA. The comment period for the proposed rule public comment was open until April 25, 2016. While the proposed rule is not a part of the NEPA process, the comments on the proposed rule helped the planning team modify the preferred alternative for use in this final plan/EIS. Based on public comments on the draft plan/SEIS and the proposed rule, the following changes have been incorporated into the final plan/EIS:

- The addition of new and updated data (including additional law enforcement data).
- The incorporation of new references.
- Minor supplementation to the impacts analysis, including additional analysis of potential redistributive effects of opening/closing areas to dog walking, incorporation of minor site changes (for example, Muir Beach since the Redwood Creek restoration and site alignment), and additional analysis regarding water quality as an impact topic dismissed.
- Clarification of the process for changes to plan implementation.
- Evaluation of additional fencing and other barriers as a method to minimize dog walking impacts.
- Relatively minor changes to some sites.
- Addition of one additional voice and sight control area in Rancho Corral de Tierra.
- On-leash dog walking added to northern beach section of Baker Beach.
- Increased buffer zone on Crissy Field on western boundary with the wildlife protection area, and a fence on the eastern boundary with the tidal outlet.
- Realigned off-leash area on Crissy Field airfield.

- Removal of Pedro Point as a potential future GGNRA land acquisition. This location will remain in the ownership of San Mateo County.
- Re-evaluation of a dog walking certification and education program.

CURRENT DOG MANAGEMENT ISSUES

At the internal scoping session of NPS staff and NEPA consultants held in January 2005, observations of current issues surrounding the dog walking controversy generally fell into the following categories:

- Expectations and views of dog walkers and other visitors
- Impacts of dogs on cultural and natural resources in the park
- Visitor use and experience
- Employee, visitor, and dog health and safety
- Needs of urban area residents
- Public confusion over NPS-wide dog regulation, GGNRA-specific rules, NPS mission and policies
- Public lack of understanding and confusion over regulations for dogs at GGNRA park sites, including why some park areas are completely closed to dogs while other areas allow on-leash dog walking
- Visitor noncompliance with regulations
- Ability of law enforcement staff to enforce rules

ALTERNATIVES CONSIDERED

This final plan/EIS considers the alternatives based on their impacts in individual areas, due to the complex nature of GGNRA and the various existing visitor use patterns and resource conditions. The final plan/EIS therefore defines dog management actions for 22 specific sites within the park.[1] A summary of alternative elements at the 22 sites is listed in table ES-1.

[1] The draft plan/EIS and draft plan/SEIS identified 22 sites, which included Pedro Point. Pedro Point is no longer included because it will remain with San Mateo County, but the number of sites remains 22 in the final plan/EIS because NPS considered Sweeney Ridge and Cattle Hill two independent sites in the proposed rule.

TABLE ES-1. SUMMARY OF ALTERNATIVE ELEMENTS BY COUNTY, NORTH TO SOUTH

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Common to All Action Alternatives: • Dog walking allowed only in areas designated for either on-leash or VSCA* dog walking. • VSCAs may be closed periodically to allow re-growth of vegetation. • All dogs brought into park must be licensed in county of residence and have current rabies vaccinations. • Maximum number of dogs per dog walker is three; at sites where permitted dog walking is allowed (Alta Trail, Rodeo Beach, Fort Baker, Fort Mason, Crissy Field, Baker Beach, and Fort Funston), NPS-issued permits allow up to six dogs. • No off-trail dog walking; no dogs in campgrounds or public buildings; on leash in parking lots, picnic areas and on paved, public roads unless otherwise noted. • Service animals accompanying a person with a disability, as defined by federal law and Department of Justice regulations (28 CFR 36.104), are allowed wherever visitors or employees are allowed. • Monitoring-based management program. *The concept of a VSCA walking area as a defined area where off-leash dog walking is allowed only under specific guidelines came from discussions in the Negotiated Rulemaking Committee for Dog Management at GGNRA.						
Permits for More than three Dogs – Commercial and Individual Dog Walkers	No permits.	All dog walkers, including commercial dog walkers, allowed up to three dogs per person. All dogs must be on leash. No permit is required.	All dog walkers, including commercial dog walkers, allowed with up to 3 dogs per person. Commercial dog walkers and private individuals with more than 3 dogs can obtain a dog walking permit; limit is 6 dogs. In a VSCA, permit holders may have up	No commercial dog walking allowed and no permits for more than 3 dogs.	Same as alternative C.	All dog walkers, including commercial dog walkers, allowed with up to 3 dogs per person. Commercial dog walkers and private individuals with more than 3 dogs can obtain a dog walking permit; limit is 6 dogs. In a VSCA, permit holders may have up to

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Permits for More than three Dogs – Commercial and Individual Dog Walkers, continued			to 6 dogs off leash. Permits would restrict use by time and area. Permitted dog walking would not be authorized in picnic areas. Permits would only be issued for: Alta Trail, Rodeo Beach, Fort Baker (excluding Drown Fire Road), Fort Mason, Crissy Field, Baker Beach, and Fort Funston.			6 dogs off leash as designated in an NPS permit. Permits would restrict use by time and area. Permitted dog walking would not be authorized in picnic areas. Permits would only be issued for: Alta Trail (Alta Trail to junction with Oakwood Valley Trail, excluding Orchard and Pacheco Fire Roads), Rodeo Beach, Marin Headlands (Lagoon Trail along Mitchell Road only from Rodeo Beach parking lot to pedestrian bridge), Fort Baker(excluding Cavallo Lodge area), Fort Mason (excluding grass areas of Great Meadow), Crissy Field (direct access segments of the Promenade between Airfield and Central beach and between East Beach parking

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Permits for More than three Dogs – Commercial and Individual Dog Walkers, continued						and closest access to Central beach with corresponding beach access trails, Central beach, Airfield, and Mason Street multi-use path (pedestrian lane); Baker Beach (North Beach, Baker Beach Access Trails #1 and #2, the segment of the Coastal Trail connecting the northern parking lot and Baker Beach Access Trail #1, and the parking lots with connecting trail between them); and Fort Funston (excluding the Coastal Trail north of the Funston Beach Trail North).

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Marin County Sites						
Stinson Beach (parking lots and north and central picnic areas only)	On leash.	Same as alternative A.	Same as alternative A.	No dogs.	Same as alternative A.	On leash in north and central picnic areas with on-leash path to Upton Beach added from north parking lot. In instances when the South Parking Lot floods, impeding access to the South Picnic Area, the Central Picnic Area would become dog-free until access to the South Picnic Area could be restored.
Homestead Valley	Entire site on leash or under voice control.	Homestead Fire Road, and neighborhood connector trails (Homestead Trail and Homestead Summit Trail) to be designated in the future: on leash.	Same as alternative B.	Homestead Fire Road: on leash.	Same as alternative B.	Homestead Fire Road, Homestead Summit Trail, Homestead Trail, and Eagle Trail: on leash

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Alta Trail **Orchard Fire Road** **Pacheco Fire Road**	On leash or under voice control from Marin City to Oakwood Valley.	Alta Trail: on leash to Orchard Fire Road. Orchard and Pacheco fire roads: on leash.	Same as alternative B.	No dogs.	Alta Trail: on leash to junction with Morning Sun Trail (see Marin Headlands Trails alternative E for description of Morning Sun Trail). Orchard and Pacheco fire roads: on leash.	Alta Trail from Donahue Street to Morning Sun Trail, Orchard and Pacheco Fire Roads, and Rodeo Avenue Trail: on leash
Oakwood Valley	Oakwood Valley Fire Road and Oakwood Valley Trail from junction with the Fire Road to junction with Alta Trail: on leash or under voice control. Oakwood Valley Trail from trailhead to junction with Oakwood Valley Fire Road: on leash.	Oakwood Valley Fire Road and Oakwood Valley Trail: on leash to junction of the trail and fire road.	Oakwood Valley Fire Road: VSCA to junction with Oakwood Valley Trail. Double gates at both ends and with continuous fencing to protect sensitive habitat. Oakwood Valley Trail: on leash from junction with Fire Road to new gate at junction with Alta Trail.	Same as alternative B.	Oakwood Valley Fire Road: VSCA to junction with Oakwood Valley Trail. Double gates at both with non-continuous fencing where needed to protect sensitive habitat. Oakwood Valley Trail: on leash from junction with Fire Road to junction with Alta Trail.	Oakwood Valley Fire Road and Oakwood Valley Trail to the junction of Alta Trail, Rhubarb Trail (community connecting trail segment) from the park boundary to Tennessee Valley Road: on leash. Oakwood Meadow Trail: no dogs.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Muir Beach	Beach only: on leash or under voice control. Bridge and path to beach: on leash.	Beach, bridge and path to beach, and Muir Beach Trail (trail to be built as part of Muir Beach Wetland and Creek Restoration Project): on leash.	Same as alternative B.	Proposed Muir Beach Trail: on leash.	Beach South of Entrance Path from parking lot: VSCA. Proposed Muir Beach Trail, bridge, and path to beach: on leash.	Beach, bridge, Kaashi Way, Muir Beach Trail, and Pacific Way access trail: all on leash. Fencing along the dunes and lagoon. No dogs in surface waters when lagoon and ocean are connecting.
Rodeo Beach / South Rodeo Beach	Both beaches: on leash or under voice control. Footbridge and access trail to beach: on leash.	Both beaches: on leash. Footbridge and access trail to beach: on leash.	Rodeo Beach: VSCA extending south to bluff. Footbridge to beach: on leash.	Rodeo Beach North of Footbridge: on leash. Footbridge to beach: on leash.	Both beaches: VSCA. Footbridge and access trail to beach: on leash.	Rodeo Beach: VSCA south to the sea stacks, pedestrian footbridge and access steps to beach: on leash. No dogs in surface water or access steps when ocean and lagoon are connecting.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Marin Headlands Trails Trails previously opened to dog walking open to consideration of on leash or no dogs, including but not limited to: • Coastal Fire Road from McCullough Road to Muir Beach • North Miwok Trail from Tennessee Valley to Highway 1 • County View Trail off the Miwok Fire Road • Miwok Fire Road to Wolf Ridge to Hill 88 • Lagoon Loop Trail • South Rodeo Beach Trail.	On leash or voice control: • Coastal Trail: Golden Gate Bridge to Hill 88-includes Lagoon Loop Trail • Coastal Trail, Wolf Ridge, Miwok Trail Loop • Old Bunker Fire Road Loop (includes section of Coastal Trail) On leash only: • Coastal Trail: Hill 88 to Muir Beach • Batteries Loop Trail • North Miwok Trail: from Tennessee Valley to Highway 1 • County View Trail • Marin Drive.	No dogs.	On leash: • Lower Rodeo Valley Trail Corridor: Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via North Lagoon Loop Trail, Miwok Trail, and Rodeo Valley Trail. Includes connector from Rodeo Valley Trail to Smith Road Trailhead. • Old Bunker Fire Road Loop (includes section of Coastal Trail) • Batteries Loop Trail.	Same as alternative B.	On leash: • Conzelman Coastal Trail from Highway 101 to Rodeo Beach parking lot, following Conzelman Coastal Trail to McCullough Road intersection and then the Coastal Trail Bike route – including Julian Road – to Rodeo Beach Parking lot • Old Bunker Fire Road Loop (includes section of Coastal Trail) • Batteries Loop Trail • North Miwok Trail: from Tennessee Valley to Highway 1 • County View Trail • Marin Drive • Rodeo Avenue Trail • Morning Sun Trail.	On leash: • Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via North Lagoon Loop Trail, Miwok, and Bobcat Trail segments connecting Rodeo Valley and Lagoon Trails only, and Rodeo Valley Trail. Includes connector from Rodeo Valley Trail to Smith Road Trailhead • Old Bunker (Fire) Road Loop (includes section of Coastal Trail) • Batteries Loop Trail • Rodeo Avenue Trail • Morning Sun Trail

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Fort Baker	On leash in areas where dogs allowed.	Drown Fire Road, Bay Trail (not including Battery Yates Loop), Vista Point Trail (to be built), Lodge/Conference Center grounds, and parade ground: on leash.	Drown Fire Road, Bay Trail including Battery Yates Loop Road, Vista Point Trail (to be built), Lodge/Conference Center grounds, and parade ground: on leash.	Lodge/Conference Center grounds, Bay Trail (not including Battery Yates Loop) and Vista Point Trail (to be built): on leash.	Same as alternative C.	Bay Trail from and including Conzelman parking lot to northern boundary of site: on leash. Lodge/Conference Center grounds, and parade ground: on leash. Fort Baker Trail and trails that connect the Fort Baker Trail to the Bay Trail: on leash.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
San Francisco County Sites						
Upper and Lower Fort Mason	On leash.	On leash in all areas where allowed (Great Meadow, Laguna Green, lawns, sidewalks, paved trails and open areas around housing).	Inner Great Meadow and Laguna Green: VSCAs with barriers to separate VSCAs from other uses. Lawn below Laguna Street path: on leash. All sidewalks/paved trails/open areas around housing: on leash.	Great Meadow: on leash. Laguna Green: VSCA. Lawn below Laguna Street path: on leash. All sidewalks/paved trails/ open areas around housing: on leash.	Same as alternative C.	Great Meadow paths and grass, sidewalks/ paved trails/grass areas facing Fort Mason Quad housing, Shafter court triangulated grass area, and median grass areas on Franklin or east of Bldg. 101: on leash. Laguna Green: VSCA with fencing or vegetative barrier. Lawn along Laguna Street path, Fort Mason Bay Trail, Black Point Battery Trail: on leash.
Crissy Field Wildlife Protection Area	Voice control except for seasonal leash restriction.	No dogs.	Same as alternative B.	Same as alternative B.	On leash.	Same as alternative B.
Crissy Field	Promenade (East Beach to the Warming Hut): voice control.	Promenade: on leash.	Promenade: same as alternative B.	Promenade: same as alternative B.	Promenade: same as alternative B.	Promenade: same as alternative B.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Crissy Field, continued	Airfield: voice control.	Airfield: on leash.	Airfield – middle section: VSCA between the easternmost and westernmost north/south paths. Reduce or preclude VSCA as dictated by special event. Airfield – eastern and western section: on leash east of easternmost north/south path and west of westernmost north/south path.	Airfield – western section: VSCA west of easternmost north/south path Reduce or preclude VSCA as dictated by special event. Airfield – eastern section: on leash east of easternmost north/south path.	Airfield: VSCA. Reduce or preclude VSCA as dictated by special event.	Airfield – central section: VSCA bounded by on-leash paths on the eastern and western ends and on-leash buffers on the northern and southern boundaries. May reduce or preclude VSCA depending on nature and size of special events. Airfield – eastern section: on leash Airfield – western section: no dogs.
	East and Central Beaches: voice control.	East and Central Beaches: on leash Paths to Central Beach: on leash.	Central Beach: VSCA. Paths to Central Beach: on leash.	No dogs.	Central Beach: VSCA. East Beach: on leash. Paths to Central Beach: on leash.	Central Beach: VSCA with fencing along the dunes and at western and eastern ends with central accessible platform to sand. Paths to Central Beach: on leash.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Crissy Field, continued	Trails and grassy areas near East Beach and around Old Coast Guard Station: voice control.	Trails and grassy areas near East Beach, around Old Coast Guard Station, and on Mason Street Bike Path: on leash.	Same as alternative B.	Same as alternative B except no dogs in the West Bluff picnic area.	Same as alternative B.	Same as alternative B, except no dogs in the West Bluff Picnic Area.
Fort Point Promenade / Fort Point National Historic Site Trails	Fort Point Promenade, Battery East Trail, Andrews Road, Presidio Promenade, and grassy area near restrooms: on leash.	Same as alternative A.	Same as alternative A.	Battery East Trail: on leash.	Same as alternative A.	Fort Point Promenade, Battery East Trail, Andrews Road, Presidio Promenade, Coastal Trail, Battery East parking lot, and Warming Hut picnic area: on leash. West Bluff Picnic Area: no dogs

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Baker Beach and Bluffs to Golden Gate Bridge	Beach north of Lobos Creek: voice control. All trails except Batteries to Bluffs Trail: on leash.	Beach: on leash. All Trails except Batteries to Bluffs Trail and Battery Crosby Trail: on leash.	Same as alternative B.	Beach South of North End of North Parking Lot: on leash. Trails To Beach South of North End of North Parking Lot and Coastal Trail: on leash.	Beach South of North End of North Parking Lot: VSCA. Beach North of North End of North Parking Lot: on leash. All Trails except Batteries to Bluffs Trail and Battery Crosby Trail: on leash.	Beach north of Baker Beach Access Trail #2: on leash. Coastal Trail, Beach Access Trails #1 and #2, access trails from 25th Avenue entrance and southern non-NPS beach to the Baker Beach southern parking lot, and trail connecting the northern and southern parking lots: on leash. North Picnic Area: on leash. South Picnic Area: no dogs
Fort Miley	East and West Fort Miley: voice control.	No dogs. West Fort Miley: no dogs in picnic area due to no dog walking access.	East Fort Miley: on leash in east side trail corridor. West Fort Miley: no dogs in picnic area due to no dog walking access.	Same as alternative B.	East Fort Miley: on leash in east side trail corridor. West Fort Miley: on leash on road only.	Same as alternative C.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Lands End	Voice control.	El Camino del Mar, Lands End Coastal Trail and connecting trails and steps: on leash.	Same as alternative B.	El Camino del Mar Trail: on leash. Lands End Coastal Trail: on leash from Lands End Lookout parking lot to junction with, and on, connecting trail and steps to El Camino del Mar Trail.	Same as alternative B.	El Camino del Mar from eastern park boundary to the Memorial parking lot; Lands End Coastal Trail and connecting trails and steps: on-leash, except West Fort Miley Trail, Sutro Bath and Mile Rock trails which are no dog.
Sutro Heights Park	On leash.	Paths and parapet: on leash.	Same as alternative B.	No dogs.	Paths, parapet, and lawns: on leash.	Paths, parapet, and lawns: on leash. Formal gardens: no dog.
Ocean Beach Snowy Plover Protection Area (Stairwell 21 to Sloat Boulevard; Area between Lincoln Way and Sloat Boulevard is being surveyed by the City and County of San Francisco to determine land authority)	Voice control with seasonal leash restriction, on leash on Ocean Beach Trail along Great Highway.	Ocean Beach Trail along Great Highway: on leash.	Same as alternative B.	Same as alternative B.	Beach and Ocean Beach Trail along Great Highway: on leash.	Same as alternative B.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Ocean Beach **North of Stairwell 21**	North of Stairwell 21: voice control.	North of Stairwell 21: on leash.	North of Stairwell 21: VSCA.	Same as alternative B.	Same as alternative C.	Beach north of Stairwell 21: VSCA. Beach access stairwells from #1-#21: on-leash. Ocean Beach Trail from Cliff House to Lincoln Blvd: on-leash
South of Sloat Boulevard	South of Sloat Boulevard: voice control.	South of Sloat Boulevard: on leash.	South of Sloat Boulevard: no dogs.	Same as alternative C.	Same as alternative B.	South of Sloat Boulevard: on leash.
Fort Funston (excluding areas closed by fence or signs)	Beach: voice control with seasonal advisory at the foot of northernmost bluffs when bank swallows are nesting (April 1–August 15).	Beach: on leash with seasonal advisory at the foot of northernmost bluffs when bank swallows are nesting (April 1–August 15).	Beach: south of Funston Beach Trail (North): VSCA. North of Funston Beach Trail (North): no dogs.	Beach: south of Funston Beach Trail (North): on leash. North of Funston Beach Trail (North): no dogs.	Beach: south of Funston Beach Trail (North): VSCA. North of Funston Beach Trail (North): on leash seasonal advisory at the foot of northernmost bluffs when bank swallows are nesting (April 1–August 15).	Same as alternative C.
	South of Main Parking Lot, including all trails: voice control.	South of Main Parking Lot: on leash on all trails not closed to dogs.	South of Main Parking Lot: on leash on Funston Beach Trail (South) and Sunset Trail.	Same as alternative C.	Same as alternative C.	Same as alternative C.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Fort Funston (excluding areas closed by fence or signs), continued	North of Main Parking Lot, including all trails: voice control except for fenced wildlife/habitat protection area.	North of Main Parking Lot: on leash on all trails not closed to dogs.	North of Main Parking Lot: VSCA between (and not including) Chip Trail, Sunset Trail, and parking lot. On leash on all trails except no dogs on: Sunset Trail from parking lot to junction with Chip Trail, and Funston Horse Trail.	North of Main Parking Lot: VSCA with fencing in disturbed area north of the water fountain. All designated trails on leash except no dogs on northern end of Sunset Trail (closed to visitors due to erosion) and on Funston Horse Trail.	North of Main Parking Lot: VSCA corridor from just north of the new trail (to be built) along the northern edge of the parking lot that extends to, and includes the Funston Beach Trail (North). The VSCA corridor includes the Chip Trail and sections of the Sunset Trail, Funston Road, and Battery Davis Trail – all north of the parking lot. The VSCA also extends into the disturbed area northeast of the Funston Beach Trail (North). Harden Chip Trail to improve accessibility. The VSCA will be separated by barriers from new trail to be built along north edge of parking lot and no dog trails/areas.	North of Main Parking Lot: VSCA corridor from just north of the new, accessible (to be built) trail along the northern edge of the parking lot that is bordered on west by on-leash Coastal Trail and east above embankment extending north to, and including the Funston Beach Trail (North). The VSCA corridor includes the Chip Trail, the Battery Davis (West) trail and the Funston Trail – all north of the main parking lot. The VSCA also extends into the disturbed bowl area northeast of the Funston Trail. The Chip Trail will be harden and elevated above the sand to improve accessibility.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Fort Funston, (excluding areas closed by fence or signs), continued					On leash on all trails outside VSCA except no dogs on Funston Horse Trail.	VSCA will be separated by landscape design barrier solutions including fencing from the new trail to be built along north edge of parking lot and between off-leash, on-leash, and no dog trails/areas. On leash on all trails outside VSCA except no dogs on Funston Horse Trail and in the Area between the hang gliding area and southern parking lot (except for the Sunset Trail). New on-leash trail to be built to connect Coastal Trail and Horse Trail to the Great Highway north and planned parking area.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
San Mateo County Sites						
Mori Point	On leash on all trails.	Mori Coastal Trail and beach within GGNRA boundary: on leash.	Mori Coastal Trail, Old Mori Trail, and beach within GGNRA boundary: on leash.	No dogs.	Mori Coastal Trail, Old Mori Trail, Pollywog Trail and beach within GGNRA boundary: on leash.	Mori Coastal Trail, Old Mori Trail, Pollywog Trail, Mori Headlands Trail, and beach within GGNRA boundary: on leash.
Milagra Ridge	On leash on trails.	Fire Road, trail to overlook and WW II bunker, and Milagra Battery Trail: on leash.	Same as alternative B.	No dogs.	Same as alternative B with addition of trail to top of hill.	Fire Road, to summit and WW II Battery #244 (Bunker), and Milagra Battery Trail: on leash.
Sweeney Ridge / Cattle Hill – Combined (adjacent properties that share a trail system)	Sweeney Ridge: on leash on all trails except the Notch Trail, which is closed to dogs. Cattle Hill: not currently managed by GGNRA.	Sweeney Ridge and Cattle Hill: No dogs.	Sweeney Ridge: No dogs. Cattle Hill: Baquiano Trail from Fassler Avenue to, and including, Farallon View Trail: on leash.	Same as alternative B.	Sweeney Ridge: Sneath Lane, Sweeney Ridge Road from Portola Discovery site to Notch Trail, and Mori Ridge Trail: on leash. Cattle Hill: Baquiano Trail from Fassler Avenue to, and including, Farallon View Trail: on leash.	Sweeney Ridge: Sneath Lane and Sweeney Ridge Trail between Portola Discovery Site and Nike Missile Site: on leash. Cattle Hill: Baquiano Trail from Fassler Avenue to, and including, Farallon View Trail: on leash.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Rancho Corral de Tierra	On leash.	On leash on designated trails in two areas open to dog walking near Montara and El Granada.	Same as alternative B, with a VSCA between Le Conte and Tamarind Street, across the street and east of Farallone View School.	On leash on the two existing San Mateo County trails: Old San Pedro Mountain Road and the Farallon Cutoff in Montara.	Same as alternative C.	VSCA at Flat Top in the El Granada area. On leash on designated trails in three areas open to dog walking. Montara: Farallon Cutoff to northern intersection with Corona Pedro trail; Old San Pedro Mountain Road, Le Conte Trail, and Corona Pedro Trail. Moss Beach: Vicente Ridge Trail and Ranchette Trail. El Granada: Denniston Ridge Trail, Memorial Loop, Almeria Trail, and Clipper Ridge Trail.

DESCRIPTION OF THE ALTERNATIVES

Alternative A: No Action (Continuation of Existing Management)

The no-action alternative is defined in the NEPA guidelines as no change from current management and current conditions. In the impact analysis of no action, the final plan/EIS assumes current management would continue as it is now over the lifetime of the plan, which is approximately 20 years. Under the no-action alternative, current dog walking management and conditions would remain the same, which would include 36 CFR 2.15 (36 CFR 2.15(a)(2) applicable only in areas not part of 1979 Pet Policy—see below), 36 CFR 7.97(d), the Commission's 1979 Pet Policy (appendix A), and the GGNRA Compendium (NPS 2016; appendix B). The 1979 Pet Policy allows voice control dog walking in a number of areas of GGNRA. The 1979 Pet Policy described voice or leash control as a flexible system wherein success is dependent upon the willingness of visitors and local residents to cooperate with GGNRA personnel and the willingness of GGNRA personnel to manage dogs, people, and wildlife situations; to enforce regulations; and to cite visitors (1979 Pet Policy). As a result of the 2005 federal court decision (*U.S. v. Barley*, 405 F.Supp.2d 1121 (N.D. Cal. 2005)), the NPS currently cannot enforce the NPS-wide regulation requiring pets to be on leash (36 CFR 2.15(a)(2)) or designating an area "no dogs" for park sites that were included in the 1979 Pet Policy and where 36 CFR 1.5 was not followed (allowing for public comment). However, regulations that address disturbance to wildlife, removal of pet waste, and disturbance of other park visitors remain in effect in all areas open to dog walking in GGNRA. The GGNRA Compendium also includes provisions for the closure of park areas to dog and human use for resource or safety reasons. Under the current conditions commercial dog walkers use park lands and no permit is required.

Alternative B: NPS Leash Regulation

Alternative B realigns GGNRA dog management to the policy governing dogs at the other 391 units of the national park system, as defined by 36 CFR 2.15(a)(2). Areas closed to dogs would be further defined by a special regulation or the GGNRA Compendium. All dog walkers, including commercial dog walkers, would be allowed up to three dogs per person. All dogs would have to be on leash and no permits would be needed for dog walking.

Alternative C: Emphasis on Multiple Use – Balanced by County

Alternative C emphasizes the diversity of users of GGNRA sites and apportions dog walking geographically across Marin, San Francisco, and San Mateo counties by allowing a variety of options in each county. In Marin and San Francisco counties, there are options for on-leash areas, voice and sight control areas (VSCAs) ("off leash" is assumed to mean "under voice and sight control" throughout the description of the action alternatives, per the definition outlined in "Dog Walking Requirements" in appendix E of this final plan/EIS), and areas where dogs would be prohibited. In San Mateo, there are options for on-leash areas and areas where dogs would be prohibited. GGNRA is used by visitors for a multitude of purposes and alternative C would minimize potential conflicts, reduce potential health and safety issues, and protect natural and cultural resources, while providing dog walkers with recreational options. Alternative C also includes the consensus agreements resulting from the Negotiated Rulemaking Committee meetings. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs without a permit. Any dog walker, commercial or private, would be able to obtain a permit to walk four to six dogs, whether on leash or in a VSCA, as allowed by the regulation. Walking four to six dogs would be allowed in all areas open to dog walking, except where noted per site. Permits could restrict dog walking use by time and area, and permitted dog walking would not be authorized in picnic areas. Dog walkers would have special use permit (SUP) fees applied throughout the park. Permits would

only be issued for the following sites: Alta Trail, Rodeo Beach, Fort Baker, Fort Mason, Crissy Field, Baker Beach, and Fort Funston.

Alternative D: Most Protective of Resources and Visitor Safety

Alternative D would provide the highest overall level of protection for natural and cultural resources and the highest overall level of visitor safety. Dog management practices listed in alternative D would allow options for dogs to be exercised on leash and in VSCAs but would be more protective in areas where natural resources (plant and wildlife species) and cultural resources are located. The more protective dog management elements offered in alternative D would also provide a stronger measure of visitor protection for both dog walkers and other park visitors by reducing circumstances that would cause conflicts among users and interactions among dogs, thereby minimizing direct and indirect effects of dogs on visitors. Dog walkers would be allowed to walk one to three dogs without a permit. No commercial dog walking would be allowed under this alternative.

Alternative E: Most Dog Walking Access / Most Management Intensive

Alternative E would provide the greatest level of access for dog walkers throughout GGNRA. Alternative E would also require the most intensive long-term management to ensure that greater access for dog walkers did not impact natural and cultural resources, visitor safety, and visitor experience. Alternative E would also include the consensus agreements resulting from the Negotiated Rulemaking Committee meetings. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs without a permit. Any dog walker, commercial or private, could obtain a permit to walk four to six dogs. Walking four to six dogs would be allowed in all areas open to dog walking, except where noted per site. Permits could restrict dog walking use by time and area, and permitted dog walking would not be authorized in picnic areas. Dog walkers would have SUP fees applied throughout the park. Permits would only be issued for the following sites: Alta Trail, Rodeo Beach, Fort Baker, Fort Mason, Crissy Field, Baker Beach, and Fort Funston.

Alternative F: National Park Service Preferred Alternative

Alternative F is the preferred alternative, and was altered, in part, in response to public comments received on the draft plan/SEIS and the proposed rule. Alternative F provides a variety of visitor experiences (no dogs, on-leash dog walking, and dog walking under voice and sight control in VSCAs), as well as protection of natural resources, cultural resources, and visitor safety. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs without a permit. Any dog walker, commercial or private, could obtain a permit to walk four to six dogs. In a VSCA, permit holders could have up to six dogs under voice and sight control. Permits could restrict dog walking use by time and area, and permitted dog walking would not be authorized in picnic areas. Dog walkers would have SUP fees applied throughout the park. Permits would only be issued for the following sites: Alta Trail, Rodeo Beach, a small portion of Marin Headlands Trails, Fort Baker, Fort Mason, Crissy Field, Baker Beach, and Fort Funston. Under alternative F, permitted dog walking would be limited to certain areas of these sites.

COMMERCIAL DOG WALKING AND DOG WALKING WITH MORE THAN THREE DOGS

As stated in the above paragraphs, commercial dog walking would be allowed under alternatives B, C, E, and F (the preferred alternative). Commercial dog walking would not be allowed under alternative D. Under alternative B, commercial dog walking would be regulated under the same guidelines and regulations that apply to recreational dog walkers, including the three-dog maximum. Because alternative B does not allow for dog walking under voice control, commercial dog walking would be on leash only.

Under alternatives C, E, and F, commercial dog walking would be allowed under the same guidelines and regulations that apply to recreational dog walkers, including walking up to three dogs without a permit. However, under these three alternatives, both commercial and recreational dog walkers could apply for a SUP to walk up to six dogs. In a VSCA, permit holders may have up to six dogs under voice and sight control. Permits would specify the areas, times, and conditions under which walking four to six dogs may occur. Permits would be issued for the following sites: Alta Trail, Rodeo Beach, Fort Baker, Fort Mason, Crissy Field, Baker Beach, and Fort Funston; for alternative F a small segment of one trail in Marin Headlands Trails would also allow permitted dog walking. The hours for commercial dog walking would be limited to 8:00 a.m. to 5:00 p.m. Monday through Friday. Permitted dog walking, or the bringing of four to six dogs into the park, would not be authorized in picnic areas. Alternative D would not allow commercial dog walking, due to the emphasis on resource protection and visitor safety. The guidelines for professional dog walkers on GGNRA lands are presented in chapter 2.

The NPS intends to recover the costs of administering the SUP program under 54 USC 103104. In order to obtain a special use permit to walk four to six dogs at one time, dog walkers would be required to pay a permit fee to allow the NPS to recover these costs. Director's Order 53 allows a fee to be collected up to but not surpassing the cost of administering the SUP program. For the current interim program, the annual fee is $300 with a one-time administrative fee of $75. The SUP fee could change but would always comply with Director's Order 53 governing special park uses. See appendix F for SUP conditions and enforcement associated with noncompliance with the permit. NPS maintains discretion to alter permit conditions for either recreational dog walkers or commercial dog walkers.

MONITORING-BASED MANAGEMENT PROGRAM

In order to ensure protection of resources from dog walking activities, the dog walking regulations defined in action alternatives B, C, D, E, and F would be regularly enforced by park law enforcement, and monitored by park staff. A monitoring-based management program would be implemented encourage compliance with the dog walking regulation and would apply to all action alternatives. All areas open to dog walking, including VSCAs, would be subject to the monitoring-based management program. It will allow staff to monitor and record noncompliance as well as impacts to natural and cultural resources. Monitoring would inform park management and law enforcement when, where, and how to prioritize responses to noncompliance. Noncompliance would include behaviors that meet the definition of an uncontrolled or unattended dog, dog walking within restricted areas, dog walking under voice and sight control in areas where leashes, or being crated or confined in a carrier, are required, and dog walking under voice and sight control outside of established VSCAs. If noncompliance occurs, impacts to resources have the potential to increase and become short-term minor to major adverse. To prevent these impacts from increasing or occurring outside of the designated dog walking areas the NPS would regularly monitor all sites. When the level of compliance is deemed unacceptable based on violations and/or impacts to resources and/or other visitors, primary management actions such as focused enforcement of regulations, proposed fine increases, increased outreach and education, a specific training certification program with dog tags for anyone walking or bringing off-leash dogs into the park, time of use restrictions, establishment of buffer zones, fencing, barriers or separations, and SUP restrictions. If noncompliance continues, secondary management actions including additional training certification program elements required for use of VSCAs, limiting the number of dogs off-leash at any one time, short or long-term closures to dog walking areas, and/or increases in expansion of buffer zones or implementation of other landscape design solutions that include the adjustment of defined VSCAs. The park would evaluate whether to propose a long-term closure, which would require a special regulation. Impacts from noncompliance could reach short-term minor to major adverse, but the monitoring-based management program is designed to return impacts to a level that assumes compliance, as described in the overall impacts analysis.

PREFERRED ALTERNATIVE

A preferred alternative was selected for each of the sites identified in this plan/EIS (table ES-1). Due to the high number of sites and alternatives, a modified Choosing by Advantages process was used for choosing the preferred alternative. For each site, team members from GGNRA selected the alternative that best met the objectives of the plan (defined in chapter 1). Six main objectives were used to identify the preferred alternative. Each objective included more than one subtopic for the resource. Not all of the subtopics for each objective were compatible, requiring team members to balance competing needs. After evaluating each alternative against each objective, a preferred alternative was selected that best met the objectives for the dog management plan. In addition, a preferred alternative was selected for the handling of permits at GGNRA. To ensure consistency of the permitting process within the park, it would be applied to applicable park sites for alternatives that would include permits. Alternative C was selected as the preferred alternative for permits. This alternative states that all dog walkers, including commercial dog walkers, are allowed up to three dogs per person. Commercial dog walkers and private individuals with more than three dogs can obtain a dog walking permit; however the limit is six dogs. In a VSCA, permit holders may have up to six off-leash dogs subject to compliance with all off-leash requirements and conditions. Permits would restrict use by time and area. Permits would only be issued for: Alta Trail, Rodeo Beach, Fort Baker, Upper Fort Mason, Crissy Field, Baker Beach, and Fort Funston. This alternative provided a variety of park sites for visitors with more than three dogs to experience GGNRA.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The environmentally preferable alternative was selected for each of the 22 sites during the Choosing by Advantages meeting. The rationale to support the decision for the selection of the environmentally preferable alternative for each site is presented in detail in chapter 2. Alternative D, which is the most protective alternative based on resource protection and visitor safety, was selected as the environmentally preferable alternative for all sites, except for Fort Funston and Upper and Lower Fort Mason where alternative B (NPS leash regulation) was chosen as the environmentally preferable alternative. In the case of Fort Funston and Upper and Lower Fort Mason, alternative B provides the maximum protection of natural and cultural resources at the site.

ENVIRONMENTAL CONSEQUENCES

The summary of environmental consequences considers the actions being proposed and the cumulative impacts to resources from occurrences inside and outside the park. The potential environmental consequences of the actions are addressed for vegetation and soils, wildlife, special-status species, and cultural resources; other topics considered in detail include visitor use and experience, park operations, and human health and safety. A brief summary of the environmental consequences for each site is presented below and is discussed in detail in chapter 4.

The environmental consequences analysis for the action alternatives was based on the assumption of compliance. If substantial noncompliance occurs under the action alternatives, it may result in elevated impacts that could reach short-term minor to major adverse. However, the monitoring-based management program, which is discussed in detail in chapter 2, is designed to return impacts to a level that assumes compliance or provide beneficial impacts where dog walking is reduced or eliminated.

Marin County

Stinson Beach

Generally, impacts from action alternatives, B, C, D, and E to natural resources (vegetation, wildlife, and special-status species, including steelhead trout) would be no impact, a result of the fact that dogs would be prohibited on the trails, beach, and creek, and prohibited from the site entirely under alternative D. The preferred alternative F would have long-term, minor, adverse impacts to coastal vegetation as dogs would be prohibited on the beach but would be allowed on a formalized path to Upton Beach, which would contribute to continued erosion. However, the park would determine the most appropriate location for the access route to Upton Beach to reduce the potential for added dune erosion at this location and would consider restoration of the dunes in this area in the future. Alternative F would have no impact to wildlife or special-status species. Impacts for visitors who enjoy having dogs at the park would range from negligible to long-term, minor, adverse under action alternatives B, C, D, and E, and would be beneficial under the preferred alternative F. Impacts for visitors who did not prefer dogs at the park would be beneficial under all action alternatives including the preferred alternative F, since dogs would be prohibited from the majority of the beach except for the small connecting trail corridor at the northern boundary. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F from the addition of new employees and equipment costs. In the long-term, impacts would be negligible to minor after the initial education and enforcement period. Impacts to health and safety would be long-term, moderate, and adverse under the no-action alternative and long-term, minor, adverse under all action alternatives (including the preferred alternative F) except for D, which would have a negligible impact since dogs would be prohibited at the site.

Homestead Valley

Impacts to natural resources under the action alternatives, including the preferred alternative F, are negligible for vegetation and special-status species (northern spotted owl) and range from negligible to long-term, minor adverse for wildlife. Under the no-action alternative, impacts to wildlife would be long-term, minor to moderate, and adverse. Impacts to visitors who enjoy having dogs at the park would be long-term, minor, and adverse under the action alternatives including the preferred alternative F, while the impacts to visitors who do not enjoy dogs at the park would be beneficial under the action alternatives including the preferred alternative F. Impacts to park operations would be short-term, moderate to major and adverse for all action alternatives including the preferred alternative F. In the long-term, impacts would be negligible to minor after the initial education and enforcement period. Health and safety impacts would be negligible under all alternatives including the preferred alternative F. Impacts to park operations would also be beneficial for all action alternatives, since the site would change from under voice and sight control to on leash.

Alta Trail, Orchard Fire Road, and Pacheco Fire Road

Impacts to natural resources (vegetation and special-status species such as the mission blue butterfly) from the action alternatives, including the preferred alternative F, on vegetation would be negligible with the exception of alternative D, which would have no impact as dogs would not be allowed at the site. Impacts to wildlife from the action alternatives would range from negligible to long-term, minor, and adverse, with the exception of alternative D, which would have no impact as dogs would not be allowed at the site. The no-action alternative would result in long-term, minor to moderate, and adverse impacts for wildlife and long-term, minor, adverse impacts on special-status species such as the mission blue butterfly. Impacts to visitors who prefer dogs at the park would range from long-term, minor to moderate, and adverse for all action alternatives including the preferred alternative F, except alternative D, which would have a long-term, moderate to major, and adverse impact on this group of visitors. Visitors who do

not prefer dogs at the park would experience beneficial impacts under the action alternatives including the preferred alternative F, and long-term, moderate, adverse impacts under the no-action alternative. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives. In the long-term, impacts would be negligible to minor after the initial education and enforcement period. The action alternatives including the preferred alternative F would generally have a negligible to long-term, minor, adverse impact on health and safety.

Oakwood Valley

Impacts to the natural resources (vegetation and wildlife) under the action alternatives generally would range from negligible to long-term, minor, and adverse. The action alternatives would result in negligible impacts to special-status species, including the mission blue butterfly and the northern spotted owl. The no-action alternative would result in negligible to long-term, moderate adverse impacts to vegetation, wildlife and special-status species, including the mission blue butterfly and the northern spotted owl. Alternatives C and E would provide a VSCA at Oakwood Valley. Impacts to visitors who prefer having dogs at the park would be negligible under alternatives with VSCAs, and long-term, moderate, and adverse for alternatives that do not have VSCAs. Under the preferred alternative F, long-term moderate adverse impacts for visitors who would prefer to walk dogs at the park would occur since off-leash dog walking would no longer be available and on-leash dog walking would be allowed only in designated areas. Visitors who do not prefer dogs at the park would have beneficial impacts from all action alternatives. Impacts to park operations under all the action alternatives including the preferred alternative F would be short-term, moderate to major, and adverse. In the long-term, impacts would be negligible to minor after the initial education and enforcement period. Negligible impacts to health and safety would occur under all alternatives, including the preferred alternative F.

Muir Beach

Impacts to vegetation and wildlife would range from negligible to long-term, minor, and adverse impacts under the action alternatives, but alternative D would have no impacts on some of these communities. Impacts under the no-action alternative would range from negligible to long-term, minor, and adverse, to long-term, moderate and adverse for natural resources, while impacts from the action alternatives generally would range from negligible to long-term, minor, and adverse. Impacts to special-status species (including coho salmon, steelhead trout, and the California red-legged frog) under all action alternatives would be negligible and would range from negligible to long-term, minor, and adverse under the no-action alternative. Impacts on cultural resources would be negligible to long-term, minor, and adverse. Visitors who prefer having dogs at the site would experience long-term, minor to moderate and adverse impacts under all action alternatives except alternative D, which would have long-term, moderate, and adverse impacts. Impacts to visitors who do not prefer dogs would be beneficial under all action alternatives including the preferred alternative F, and long-term, moderate, and adverse under the no-action alternative. Impacts to park operations would be short-term, moderate to major, and adverse, but would also include long-term, negligible to minor, and adverse impacts after the initial education and enforcement period. Impacts to health and safety would range from negligible to long-term, minor, and adverse.

Rodeo Beach/South Rodeo Beach

Impacts to natural resources (vegetation, wildlife, and special-status species, include steelhead trout) would range from negligible to long-term, minor, and adverse under alternatives B and D. The no-action alternative would have impacts that range from negligible to long-term, moderate, and adverse on natural resources, while alternatives C, E, and the preferred alternative F would cause impacts ranging from long-term, minor, and adverse to long-term, moderate, and adverse impacts on some coastal community

wildlife and vegetation due to the VSCA. Visitors who prefer dogs at the site would experience beneficial impacts under alternatives C, E, and the preferred alternative F, long-term, minor to moderate, and adverse impacts under alternative B, and long-term, moderate, adverse impacts under alternative D. Visitors who do not prefer dogs would experience beneficial impacts under alternatives B and D, and long-term, minor, and adverse impacts under alternatives C, E, and the preferred alternative F. Impacts to park operations would be short-term, moderate to major, and adverse under all action alternatives. Impacts would be long-term, negligible to minor, and adverse following the initial education and enforcement period. Impacts on health and safety would range from negligible to long-term, minor, and adverse for all alternatives.

Marin Headlands Trails

Impacts to natural resources (vegetation, wildlife and special status-species, including the mission blue butterfly, steelhead trout, California red-legged frog, northern spotted owl, and marsh sandwort) range from long-term, minor to moderate, and adverse under the no-action alternative. Alternatives B and D would result in no impacts to natural resources. Under alternatives C, E, and the preferred alternative F, impacts to natural resources would range from negligible to long-term, moderate and adverse impacts for vegetation and wildlife. Cultural resource impacts would range from negligible to long-term, minor, and adverse localized impacts under all alternatives including the preferred alternative F, with the action alternatives including the preferred alternative F also having beneficial impacts. Visitors who enjoy having dogs at the park would experience long-term, minor to moderate, and adverse impacts under alternatives C, E, and the preferred alternative F, and long-term, moderate, and adverse impacts under alternatives B and D. Visitors who do not prefer having dogs at the site would experience beneficial impacts under all alternatives, including the preferred alternative F. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F. Impacts to park operations would also be long-term, negligible to minor, and adverse following the initial education and enforcement period. Alternatives B and D would have negligible impacts on health and safety, while alternatives C, E, and the preferred alternative F would have long-term, minor, and adverse impacts. Impacts to health and safety would be long-term, moderate, and adverse under the no-action alternative.

Fort Baker

Impacts to natural resources (vegetation, wildlife, and special-status species such as the mission blue butterfly) would range from negligible to long-term, minor, and adverse for all action alternatives except alternative D, which would have no impacts on the mission blue butterfly. Under the no-action alternative, there would be a long-term, minor, to moderate and adverse impacts to natural resources (vegetation, wildlife, and special-status species such as the mission blue butterfly). Cultural resource impacts would range from negligible to long-term, minor, and adverse localized impacts under all alternatives including the preferred alternative F, with the action alternatives including the preferred alternative F also having beneficial impacts. Visitors who prefer dogs at the site would experience negligible impacts under all action alternatives including the preferred alternative F, with the exception of alternative D, which would result in long-term, minor, and adverse impacts. Visitors who do not enjoy dogs would have negligible impacts under all action alternatives including the preferred alternative F except alternative D, which would result in beneficial impacts. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives, including the preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. All alternatives would result in negligible impacts to health and safety.

San Francisco County

Upper and Lower Fort Mason

Impacts to natural resources were not applicable at Upper and Lower Fort Mason. Impacts to cultural resources would range from negligible to long-term, minor, and localized adverse under all alternatives including the preferred alternative F, with the action alternatives including the preferred alternative F also having beneficial impacts. Visitors who enjoy dogs would experience negligible impacts under alternative B and the preferred alternative F, but beneficial impacts under all other action alternatives. Visitors who do not enjoy dogs would experience long-term, minor, and adverse impacts under alternatives B, D, and the preferred alternative F, and long-term, moderate, and adverse impacts under alternatives C and E. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. Impacts to health and safety would be long-term, minor, adverse for alternative B and long-term, minor to moderate and adverse for alternatives C, D, E, and the preferred alternative F. Impacts to health and safety would be long-term, moderate and adverse for the no-action alternative.

Crissy Field (includes Wildlife Protection Area)

In general, impacts to natural resources (vegetation, wildlife, and special-status species, including the Western snowy plover) would be negligible to long-term, minor, and adverse under the action alternatives. The exception would be the long-term, minor, to moderate impacts that would occur to wildlife and the long-term, minor, and adverse impacts that would occur to the Western snowy plover under alternative E. Under the no-action alternative, impacts to natural resources (vegetation, wildlife, and the Western snowy plover) would range from long-term, minor, to moderate, and adverse. Impacts to cultural resources would range from negligible to long-term, minor, and adverse localized under all alternatives including the preferred alternative F, with the action alternatives including the preferred alternative F also having beneficial impacts. Visitors who enjoy having dogs at the site would experience long-term, minor to moderate, adverse impacts under alternatives C, D, E, and the preferred alternative F, and long-term, moderate to major, and adverse impacts under alternative B. Visitors who do not enjoy dogs would have beneficial impacts under all action alternatives including the preferred alternative F, but long-term, moderate, and adverse impacts under the no-action alternative. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. Health and safety impacts under the action alternatives would range from no impact to long-term, minor to moderate, and adverse depending on the area within the site. Impacts from the no-action alternative would be long-term, moderate to major, and adverse.

Fort Point Promenade/Fort Point NHS Trails

Impacts to vegetation and wildlife were not analyzed at Fort Point as the site is largely developed. Fort Point however, does provide critical habitat for the Franciscan manzanita, although the plant does not currently occur at the site (USFWS 2012, 54530). Impacts to this special-status species, the Franciscan Manzanita, would be negligible for all action alternatives and long-term, minor, adverse for the no-action alternative because current dog use at the site, particularly off-leash dogs, could prevent successful introduction of the species to the site. Impacts to cultural resources would range from negligible to long-term, minor, and adverse localized under all alternatives including the preferred alternative F, with the action alternatives including the preferred alternative F also having beneficial impacts. Visitors who prefer having dogs at the park would experience negligible impacts under alternatives B, C, E, and the preferred alternative F, and long-term, minor, and adverse impacts under alternative D. Visitors who do

not prefer having dogs at the site would experience negligible to long-term, minor, and adverse impacts under alternatives B, C, E, and the preferred alternative F. These visitors would experience beneficial impacts under alternative D. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. Impacts to health and safety would be long-term, minor, and adverse under the action alternatives including the preferred alternative F, and long-term, minor to moderate, and adverse under the no-action alternative.

Baker Beach and Bluffs to Golden Gate Bridge

Impacts to natural resources (vegetation, wildlife, and special-status species, including the mission blue butterfly and five listed plant species) would range from negligible to long-term, minor, and adverse for the action alternatives including the preferred alternative F, but long-term, minor to moderate, adverse impacts would occur to coastal community wildlife under alternative E. Impacts from the no-action alternative to natural resources (vegetation, wildlife, and special-status species, including the mission blue butterfly and five listed plant species) would range from negligible to long-term, moderate, and adverse. Impacts to cultural resources would range from negligible to long-term, minor, and adverse localized under all alternatives including the preferred alternative F, with the action alternatives including the preferred alternative F also having beneficial impacts. Visitors who enjoy having dogs at the park would experience long-term, minor to moderate, adverse impacts under alternatives B and C, long-term, moderate, and adverse impacts under alternative D and the preferred alternative F, and negligible impacts under alternative E. Visitors who do not prefer dogs would have beneficial impacts under all action alternatives including the preferred alternative F, with the exception of alternative E, which would have long-term, minor, and adverse impacts. The no-action alternative would result in long-term, minor to moderate and adverse impacts on these visitors. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. Impacts on health and safety would be negligible for alternatives B, C, D, and the preferred alternative F, long-term, minor, adverse for alternative E, and long-term, minor to moderate, and adverse for the no-action alternative.

Fort Miley

Impacts to natural resources would range from negligible to long-term, minor, and adverse for all alternatives including the preferred alternative F, but alternatives B and D would have no impact on wildlife in coniferous communities. Impacts to cultural resources would range from negligible to long-term, minor, and adverse localized under all alternatives including the preferred alternative F, with the action alternatives including the preferred alternative F also having beneficial impacts. Visitors who prefer having dogs at the park would experience long-term, minor, and adverse impacts under the action alternatives including the preferred alternative F, while visitors who do not prefer dogs at the park would experience beneficial impacts under these alternatives. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. Impacts on health and safety would be negligible for all alternatives.

Lands End

Impacts on natural resources (vegetation and wildlife) from the action alternatives including the preferred alternative F would range from negligible to long-term, minor, and adverse. The no-action alternative would have impacts that range from negligible to long-term, moderate, and adverse on natural resources (vegetation and wildlife). Impacts on cultural resource would be negligible for all action alternatives

including the preferred alternative F, and negligible to long-term, minor, and adverse localized impacts for the no-action alternative. Visitors who enjoy dogs at the park would experience long-term, minor to moderate, and adverse impacts under the action alternatives including the preferred alternative F, while visitors who do not enjoy dogs at the site would experience beneficial impacts under these alternatives. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. Impacts to health and safety would be negligible for the action alternatives including the preferred alternative F, and would be long-term, minor to moderate, and adverse for the no-action alternative.

Sutro Heights Park

Natural and cultural resources were not applicable at Sutro Heights Park. Impacts on visitors who enjoy having dogs at the park would be long-term, minor, and adverse for alternatives B, C, and D, and negligible for alternative E and the preferred alternative F. Visitors who do not enjoy dogs would experience beneficial impacts under alternatives B, C, and D, and negligible to long-term, minor, and adverse impacts under alternative E and the preferred alternative F. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. Impacts on health and safety would be negligible for all alternatives.

Ocean Beach (Includes Snowy Plover Protection Area)

Impacts to coastal community vegetation would range from negligible to long-term, minor, and adverse under all alternatives. However, impacts to the wildlife in the Ocean Beach Snowy Plover Protection Area (SPPA) would be long-term, moderate to major, and adverse to shorebirds under the no-action alternative, and long-term, minor, and adverse under alternative E. Alternatives B, C, D, and the preferred alternative F would have no impact on coastal community wildlife in the SPPA because dogs would be prohibited in this area. Coastal community wildlife outside the SPPA would experience long-term, moderate impacts under the no-action alternative, long-term, minor to moderate impacts under alternatives C, E, and the preferred alternative F, and long-term, minor, adverse impacts under alternatives B and D. Inside the SPPA, impacts to the Western snowy plover would be long-term, moderate, and adverse under the no-action alternative; impacts would be long-term, minor, and adverse under alternative E; no impacts under alternatives B, C, D, and the preferred alternative F would occur on this threatened species. Outside the SPPA, impacts on the Western Snowy Plover would range from negligible to long-term, minor, and adverse for the action alternatives including the preferred alternative F, and would be long-term, minor to moderate, and adverse under the no-action alternative. Impacts to visitors who enjoy having dogs at the park would be long-term, moderate to major and adverse under alternatives B and D, and long-term, minor to moderate, adverse under alternatives C, E, and the preferred alternative F. Impacts to visitors who do not enjoy dogs would be beneficial under the action alternatives including the preferred alternative F, and long-term, moderate, and adverse under the no-action alternative. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. Impacts to health and safety would be long-term, minor to moderate, and adverse under alternatives C, E, and the preferred alternative F, long-term, minor, and adverse under alternatives B and D, and long-term, moderate, and adverse under the no-action alternative.

Fort Funston

Impacts to coastal community vegetation would be long-term, major, and adverse under the no-action alternative, long-term, moderate, adverse under alternative E, and long-term, minor to moderate and

adverse under alternatives C, D, and the preferred alternative F. Alternative B would only have negligible impacts to vegetation. Coastal community wildlife would experience long-term, moderate to major, adverse impacts from the no-action alternative; long-term, moderate, and adverse impacts from alternatives C, E, and the preferred alternative F; and long-term, minor, adverse impacts from alternatives B and D. Impacts on the bank swallow would be long-term, minor and adverse under the no-action alternative, negligible under alternatives B and E. Alternatives C, D, and the preferred alternative F would have no impact on the bank swallow. Impacts to the San Francisco lessingia would be long-term, minor, and adverse for alternatives C, D, E, and the preferred alternative F, negligible for alternative B, and long-term, moderate, and adverse under the no-action alternative. Impacts to cultural resources would range from negligible to long-term, minor, and adverse localized under all alternatives including the preferred alternative F, with the action alternatives including the preferred alternative F also having beneficial impacts. Visitors who enjoy having dogs at the park would experience long-term, moderate to major, adverse impacts under alternative B and D, long-term, moderate, and adverse impacts under alternative C, and long-term, minor, adverse impacts under alternatives E and the preferred alternative F. Impacts to visitors who do not prefer dogs would be long-term, moderate to major, and adverse for the no-action alternative, long-term, moderate, and adverse under alternative E and the preferred alternative F, long-term, minor to moderate, and adverse for alternative C, long-term, minor, adverse for alternative D, and negligible to long-term, minor, and adverse under alternative B. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. Impacts to health and safety would be long-term, moderate to major, and adverse for the no-action alternative, long-term, minor to moderate, adverse for alternatives C, D, E, and the preferred alternative F, and long-term, minor, and adverse for alternative B.

San Mateo County

Mori Point

Impacts to natural resources (vegetation, wildlife, and special-status species including the California red-legged frog, San Francisco garter snake, and a listed plant species) would generally range from negligible to long-term, minor, and adverse, with alternative D having no impact. The no-action alternative would have a long-term, minor to moderate, adverse impact on coastal scrub, chaparral, and grassland wildlife, and a negligible to long-term, moderate, and adverse impact on the California red-legged frog. Impacts to visitors who prefer dogs at the park would be long-term, minor to moderate, and adverse for alternatives B and C, long-term, minor, adverse for alternative E and the preferred alternative F, and long-term, moderate to major and adverse for alternative D. Visitors who do not prefer dogs would experience beneficial impacts under the action alternatives including the preferred alternative F. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. Impacts to health and safety would be negligible for all alternatives.

Milagra Ridge

Impacts to natural resources (vegetation and wildlife) would range from negligible to long-term, minor, and adverse for the action alternatives including the preferred alternative F, with alternative D having no impact. Impacts to special-status species (including the San Bruno elfin butterfly, mission blue butterfly, California red-legged frog, and San Francisco garter snake) would range from no impacts to negligible impacts under the action alternatives. The no-action alternative would have a long-term, minor to moderate and adverse impact on wildlife and negligible to long-term minor adverse impacts to special-status species. Impacts on visitors who enjoy dogs would be long-term, minor, and adverse for

alternatives B, C, and the preferred alternative F; negligible to long-term, minor, adverse for alternative E; and long-term moderate adverse impacts under alternative D. Visitors who do not enjoy dogs at the park would experience beneficial impacts under all action alternatives, including the preferred alternative F. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. Impacts on health and safety would be negligible for all action alternatives, including the preferred alternative F.

Sweeney Ridge/Cattle Hill

Under all action alternatives, impacts to vegetation and the California red-legged frog would be negligible for alternatives C, E and the preferred alternative F and no impacts would occur under alternatives B and D. Impacts to wildlife would be long-term, minor to moderate, and adverse under the no-action alternative, and long-term, minor, and adverse under alternative E and the preferred alternative F. Impacts to wildlife would be long-term, minor, and adverse at Cattle Hill for alternative C. There would be no impact to wildlife under alternatives B and D, or at Sweeney Ridge under alternative C. Impacts to the mission blue butterfly would be negligible at Sweeney Ridge under alternative E and the preferred alternative F, and long-term, minor, and adverse at Sweeney Ridge under the no-action alternative. There would be no impacts to the mission blue butterfly at Cattle Hill under alternatives B, C, D, and the preferred alternative F. No impacts would occur to the San Francisco garter snake under alternatives B or D, or at Sweeney Ridge under alternative C and the preferred alternative F. Impacts at Cattle Hill under alternative C and the preferred alternative F would be negligible. Impacts under alternative E would be negligible for both sites. Impacts on visitors who enjoy dogs would be long-term, moderate, and adverse for alternatives B and D, long-term, minor to moderate, and adverse for alternative C, and long-term, minor, adverse for alternative E and the preferred alternative F. Visitors who do not enjoy dogs would experience beneficial impacts under alternatives B, C, and D; long-term, minor, and adverse impacts under alternative E; and negligible impacts under the preferred alternative F. Impacts on these visitors under the no-action alternative would be long-term, minor to moderate, and adverse. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. Impacts on health and safety would be negligible at both sites for the no-action alternative and alternative E, and negligible for Cattle Hill under alternative C and the preferred alternative F. Negligible impacts on health and safety would occur under all action alternatives for Sweeney Ridge.

Rancho Corral de Tierra

Impacts to natural resources (vegetation, wildlife, and special-status species including the California red-legged frog, San Francisco garter snake, and Hickman's potentilla) would generally range from negligible to long-term, moderate, and adverse for all action alternatives. The no-action alternative would have a long-term, minor adverse impact on vegetation; a long-term, minor to moderate, adverse impact on wildlife; and negligible to long-term, minor adverse impacts to special-status species including the California red-legged frog, San Francisco garter snake; a long-term moderate adverse impact would occur to the listed plant, Hickman's potentilla at Rancho Corral de Tierra since there are only nine populations of this plant at Rancho, two of which are adjacent to popular trails at the site. Impacts to visitors who prefer dogs at the park would be long-term, moderate and adverse for alternative D; long-term, minor to moderate for alternative B and the preferred alternative F; and negligible for alternatives C and E. Visitors who do not prefer dogs would experience beneficial impacts under alternatives B, D, and the preferred alternative F; under alternatives C and E impacts to these visitors would be negligible due to the VSCA. Impacts to visitors under the no-action alternative would be long-term, minor adverse. Impacts to park operations would be short-term, moderate to major, and adverse for all action alternatives including the

preferred alternative F. Following the initial education and enforcement period, impacts would be long-term, negligible to minor, and adverse. Impacts to health and safety would be negligible for B, D, and the preferred alternative F, and would be long-term, minor and adverse under alternatives C and E. Impacts under the no-action alternative would be long-term, minor to moderate, and adverse.

This *Final Dog Management Plan / Environmental Impact Statetment* is organized by the chapters listed below.

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Acronyms

ANPR	Advance Notice of Proposed Rulemaking
APE	area of potential effects
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CNPS	California Native Plant Society
DOI	U.S. Department of the Interior
DPA	dog play area
EA	environmental assessment
EIS	environmental impact statement
ESA	Endangered Species Act
FIB	fecal indicator bacteria
FRA	Federal Rehabilitation Act
GGNRA	Golden Gate National Recreation Area
GMP	general management plan
GMPA	General Management Plan Amendment
LOD	limit of disturbance
NEPA	National Environmental Policy Act of 1969
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NHS	National Historic Site
NOI	notice of intent
NPS	National Park Service
NRHP	National Register of Historic Places
PEPC	Planning, Environment, and Public Comment
plan/EIS	Dog Management Plan / Environmental Impact Statement
PTMP	Presidio Trust Management Plan
SEIS	supplemental environmental impact statement
SHPO	State Historic Preservation Office (Officer)
SNRAMP	Significant Natural Resource Areas Management Plan
SPPA	Snowy Plover Protection Area
SUP	special use permit
TMDL	total maximum daily load
USFWS	U.S. Fish and Wildlife Service
VA	Veteran's Administration
VSCA	voice and sight control
WPA	Wildlife Protection Area
WW	World War

Purpose of and Need for Action

CHAPTER 1: PURPOSE AND NEED FOR ACTION

INTRODUCTION

This "Purpose and Need for Action" chapter describes the reasons why the National Park Service (NPS) is taking action at this time and provides background information on the final Golden Gate National Recreation Area (GGNRA or park) Dog Management Plan / Environmental Impact Statement (final plan/EIS).

PURPOSE AND NEED FOR ACTION

The *National Environmental Policy Act of 1969* (NEPA) requires an environmental impact statement (EIS) to briefly provide a statement of purpose and need for the action the agency is proposing. The purpose states the goal the park must achieve by taking action and the need for action summarizes why action is required. An internal scoping session with park staff and NEPA consultants was held, as required by the NEPA and NPS *Director's Order #12: Conservation Planning, Impact Analysis, and Decision Making* (NPS 2011d), to define the purpose and need for taking action, and discuss planning objectives and conceptual approaches to alternatives (NPS 2005a, 11). At that internal scoping session, the following statements of purpose and need were developed.

The purpose of GGNRA is to offer national park experiences to a large and diverse urban population while preserving and interpreting its outstanding natural, historic, scenic, and recreational values.

Purpose for Taking Action

The purpose of the final plan/EIS is to determine the manner and extent of dog use in appropriate areas of the park. This plan would promote the following objectives:

- Provide a clear, enforceable dog management policy
- Preserve and protect natural and cultural resources and natural processes
- Provide a variety of visitor experiences
- Improve visitor and employee safety
- Reduce user conflicts
- Maintain park resources and values for future generations.

The purpose of the final plan/EIS is to determine the manner and extent of dog use in appropriate areas of the park.

Need for Action

A plan/EIS is needed because GGNRA resources and values, as defined by the park's enabling legislation and the NPS *Organic Act*, could be compromised to the extent that, without action, those resources and values in some areas of the park might not be available for enjoyment by future generations. Additionally, a dog management policy inconsistent with NPS regulations and increased public expectations for use of the park for dog recreation has resulted in controversy, litigation, and compromised visitor and employee safety, affecting visitor experience and resulting in resource degradation. The conflicts will likely escalate if not addressed in a comprehensive plan/EIS.

OBJECTIVES

Objectives are specific goals that describe what GGNRA intends to accomplish by preparing this final plan/EIS. These objectives come from a variety of sources, including NPS management policies, laws, and regulations. The objectives help develop alternatives for evaluation and public review. The internal scoping process yielded the following specific objectives for this planning process.

VISITOR EXPERIENCE AND SAFETY

- Minimize conflicts related to dog use by providing a variety of safe, high-quality visitor use experiences, including areas where dogs are allowed.

LAW ENFORCEMENT / COMPLIANCE WITH DOG RULES, AND PARK OPERATIONS

- Maximize dog walker compliance with clear, enforceable parameters in order to improve park operations and use of staff resources in managing dog walking.

PARK OPERATIONS

- Provide adaptability and flexibility so that information gathered from monitoring can be used in future decision-making based on estimated outcomes, including in new park areas.
- Ensure a safe and healthy working environment for park staff.
- Evaluate commercial dog walking, and if allowed, create and implement an enforceable policy.

NATURAL RESOURCES

- Protect native wildlife and their habitat (including sensitive species and their habitat, and federally or state listed, unique, or rare species) from detrimental effects of dog use, including harassment or disturbance by dogs.
- Minimize degradation of vegetation, soil, and water resources by dog use.
- Preserve opportunities for future natural resource restoration and enhancement.

CULTURAL RESOURCES

- Preserve opportunities for future cultural resource restoration and enhancement.
- Protect cultural resources from the detrimental effects of dog use.

EDUCATION

- Build community support for the plan to maximize management of dog walking use.
- Increase public understanding of NPS policies.

BACKGROUND OF DOG MANAGEMENT AT GOLDEN GATE NATIONAL RECREATION AREA

Dogs that are not controlled by caging or a leash no longer than six feet are currently prohibited across the entire national park system (36 CFR 2.15 (a)(2)), with the exception of GGNRA. This exception is the result of a 2005 decision by the United States District Court for the Northern District of California but has its roots in earlier policy decisions by the park.

GOLDEN GATE NATION RECREATION AREA LANDS INCLUDED IN THE PLAN / FINAL ENVIRONMENTAL IMPACT STATEMENT

In 1972, GGNRA was established by Congress with a boundary that encompassed 32,000 acres in San Francisco and Marin counties. Today, the park has more than doubled in size and its boundary now encompasses approximately 80,500 acres in San Francisco, Marin, and San Mateo counties.

This final plan/EIS only addresses lands directly managed by GGNRA and certain additional lands that will be directly managed by the park in the near future.

Within this boundary, GGNRA owns approximately 34,000 acres and manages approximately 20,000 of those acres. This final plan/EIS only addresses lands and waters directly managed by GGNRA and certain additional lands that will be directly managed by the park in the near future. GGNRA-owned lands in Olema Valley north of Bolinas-Fairfax Road will not be included, as they are managed by Point Reyes National Seashore through an agreement with GGNRA (see map 1 in the "Maps" section of this document). These areas will continue to be managed under 36 CFR 2.15.

The plan addresses dog walking and dog walkers. *Dog walker* means an owner or guardian of a dog who brings or accompanies a dog in the locations identified under (d)(1)(i) (Proposed Rule, 36 CFR 7.97 Special Regulations, Areas of the National Park Service, GGNRA Dog Management) and engages in dog walking. *Dog walking* means the act of walking with or engaging in any other activity with a dog where the dog is present on lands or waters administered by the NPS in the locations identified under (d)(1)(i) in the proposed rule. Persons whose dogs are fully confined in a vehicle are not considered to be engaged in dog walking for purposes of this paragraph. *Owner* means each person who owns a dog. If a dog has more than one owner, all such persons are jointly and severally liable for the acts or omissions of a dog owner under paragraph (d) of the proposed rule even if the animal was in possession and control of a keeper at the time of an offense. *Guardian* means a person who has custodial or supervisory authority or control over a dog or dogs.

Alternatives in this final plan/EIS include locations in Marin, San Francisco, and San Mateo counties. The selection of sites addressed in this final plan/EIS was determined by NPS managers, and was based on information from historical and current dog management in GGNRA, including the 1979 Pet Policy (appendix A); NPS law, policy, and regulations; park resources; and the Federal Panel Recommendations to the General Superintendent (NPS 2002a, 1). The panel concluded that under voice and sight control dog walking in GGNRA may be appropriate in selected locations where resource impacts can be adequately mitigated and public safety incidents and public use conflicts can be appropriately managed.

In addition to lands currently under GGNRA management, the final plan/EIS includes one area within the park's boundary that will be transferred to GGNRA in the near future: Cattle Hill in San Mateo County. When the dog management planning process started, this new portion was included because it was anticipated that acquisition would occur during, or shortly after, the planning process was completed.

Early in the planning process, the NPS was anticipating that Pedro Point in San Mateo County would also be acquired as part of GGNRA. It has since been decided that Pedro Point will remain under the management of San Mateo County; therefore, all references to Pedro Point have been removed from this final plan/EIS. Another change considered in this final plan/EIS is a second San Mateo property, Rancho Corral de Tierra (Rancho), which was transferred to the NPS in December 2011. As a result of this land transfer, the Rancho site is addressed in the final plan/EIS. Table 2 in chapter 2 lists the sites that were considered under the action alternatives for this final plan/EIS. Dog management for other lands that may be acquired and managed by the NPS in the future is discussed under "Elements Common to Action Alternatives" in chapter 2.

GGNRA-managed lands not specifically addressed in this final plan/EIS, but which are not currently closed to dogs, include (but are not limited to) the following:

- In Marin County: lands north of Stinson Beach and south of Bolinas-Fairfax Road (excluding Audubon Canyon Ranch lands), between Highway 1 and Marin Municipal Water District lands and Mount Tamalpais State Park lands—encompassing land in Morses Gulch and McKennan Gulch and the lands above Audubon Canyon Ranch.
- In Marin County: GGNRA coastal lands north of—and including—Muir Beach Overlook and west of Highway 1, and the former Banducci lands in Franks Valley.
- In San Mateo County: an easement over coastal lands and beach south of Fort Funston and north of Thornton State Beach totaling 31 acres; three parcels of coastal lands, totaling 2.5 miles in length and 120 acres, south of Thornton State Beach.

LAND USE PRIOR TO PARK ACQUISITION

The history of dog walking in some areas of GGNRA began prior to the establishment of the park, when dog walking, including off-leash dog walking, occurred informally at sites under varied jurisdictions in San Francisco and Marin counties. Some of the lands designated as part of the new national recreation area had been formerly owned and managed by other public entities, and practices prohibited in national park system units, such as allowing dogs off leash, had been sanctioned or allowed on those lands. In the first years after GGNRA was established in 1972, those practices continued largely uninterrupted, although park staff recognized and documented issues arising from the practice during the early years of the park's existence.

The 1975 agreement for the lands transfer from the City of San Francisco to the NPS states that "The National Park Service, acting through the General Superintendent, agrees to utilize the resources of GGNRA in a manner that will provide for recreational and educational opportunities consistent with sound principals of land use, planning and management, to preserve the GGNRA in its natural setting and protect it from development and uses which would destroy the scenic beauty and natural character of the area, and to maintain the transferred premises in a good and sightly condition:" There is no additional specificity as to what uses constituted "recreational opportunities." The deeds for the transferred lands state that: "To hold only so long as said real property is preserved and used for recreation and park purposes," also with no additional specificity as to what uses constituted recreation.

The lands in San Francisco known as the "Presidio" are managed by both the NPS and the Presidio Trust. The Presidio was once one of the oldest continuously operating military posts in the nation. Since 1994, when the Presidio was transferred to the NPS, it has been a distinct public park site in San Francisco. In 1996, Congress passed the Presidio Trust Act, which established the Presidio Trust and put the interior 80 percent of Presidio lands, approximately 1,170 acres, (known as Area B) under the management of the

Presidio Trust. The coastal portions of the Presidio (known as Area A) remain under the management of the NPS. This final plan/EIS addresses only the Area A Presidio lands.

The Presidio Trust is a cooperating agency for this final plan/EIS. The NPS granted the Presidio Trust cooperating agency status with regard to those lands addressed by the final plan/EIS in Area A of the Presidio, adjacent to lands managed by the Presidio Trust, and based on the Trust's special expertise in the Presidio Area B and the potential for spillover effects onto Trust lands from adjacent GGNRA areas.

GOLDEN GATE NATIONAL RECREATION AREA CITIZENS' ADVISORY COMMISSION AND THE 1979 PET POLICY

The legislation establishing GGNRA in 1972 (PL-92-589) also established the GGNRA Citizens' Advisory Commission, which coordinated public involvement for the park. Their charter stated that they may advise the park on general policies and specific matters related to planning, administration, and development, and in doing so may seek the views of various citizen groups and members of the public.

In 1978, due to public requests from dog walkers, the GGNRA Citizens' Advisory Commission developed a pet policy for the park. In 1979, they formally recommended the policy, which has since been known as the 1979 Pet Policy (appendix A), to the park Superintendent. The 1979 Pet Policy, developed with input from park staff, provided general guidance for dog walking and recommended locations for both on-leash dog walking and off-leash or "voice control" dog walking in lands owned and managed by GGNRA, although this recommendation did not abide by the federal regulation regarding dog walking in national parks (36 CFR 2.15). The Code of Federal Regulations (CFR) is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.

The 1979 Pet Policy identified the following areas as appropriate for voice control of dogs:

- Homestead Valley
- Oakwood Valley
- Muir Beach
- Rodeo Beach
- Several trails in Marin County
- Crissy Field
- Baker Beach, north beach area
- East and West Fort Miley
- Lands End
- Ocean Beach
- Fort Funston.

Tracks in the Sand at Fort Funston

Credit: NPS

Although in the policy the GGNRA Citizens' Advisory Commission referred to "regulations (that would) be developed by the NPS Field Solicitor's office," a special regulation to allow off-leash dog walking in GGNRA,

based on this recommendation, was never promulgated by the NPS. The GGNRA Citizens' Advisory Commission's policy did not and could not override NPS regulations prohibiting pets off leash in national parks, but for more than 20 years, the park erroneously implemented the 1979 Pet Policy in contravention of Service-wide regulations.

INCREASE IN USE OF THE PARK FOR DOG WALKING AND OTHER RECREATIONAL USES

Since the 1990s, the San Francisco Bay Area population and overall use of GGNRA park sites have increased, as have the number of private and commercial dog walkers. At the same time, the number of conflicts between park users with and without dogs began to rise, as did the fear of dogs and dog bites or attacks. The hours devoted by park staff to manage these conflicts, rescue dogs and owners, dispose of dog waste, educate the public on dog walking policies and regulations at each park site, and enforce regulations also increased. In addition, since the establishment of the park, several species with habitat in GGNRA areas used by dog walkers have been listed as threatened, endangered, or special-status species requiring special protection.

Underscoring the increasing conflict over off-leash dog use, dog walking groups filed a lawsuit against the NPS in March 2000 when GGNRA closed part of Fort Funston to the public to provide resource protection and restoration. In particular, the park intended to protect new nesting locations of the state threatened bank swallow (*Riparia riparia*) population; increase biological diversity by restoring coastal native dune scrub habitat; increase public safety by keeping visitors and their pets away from cliff areas; and protect geological resources, including the bluff top and interior dunes, that had been subject to accelerated erosion because of humans and dogs. The park discussed a 12-acre closure with interested groups, including both environmental and off-leash dog walking interests. Based on these discussions, the park reduced the closure to 10 acres. Upon initiation of the 10-acre closure, which reduced available off-leash areas, a lawsuit was filed. The federal district court held that the NPS had not adequately obtained public input on the proposed closure as required by 36 CFR 1.5. Upon completion of public involvement efforts, the court agreed that GGNRA had fully complied with required sections of 36 CFR 1.5 and that the need for "prompt protective action" was "genuine." The park closed the original 12 acres in February 2001, per the GGNRA Compendium (NPS 2001, 1). During this period, it was clarified by the Department of Justice, the U.S. Attorney, and the U.S. Department of the Interior Solicitor Offices that the voice control policy then in effect at Fort Funston and other locations in the park was contrary to NPS regulations.

In a public meeting in January 2001, the GGNRA Citizens' Advisory Commission acknowledged that the voice control policy was contrary to 36 CFR 2.15(a)(2), prohibiting off-leash dogs in national parks, and therefore illegal and unenforceable. Hundreds of people in favor of the 1979 Pet Policy attended the January 2001 GGNRA Citizens' Advisory Commission meeting, and following the meeting, the park received significant comment in support of off-leash dog walking. At the same time, the park continued to receive an increasing number of complaints by park visitors, including minorities, seniors, and families with small children, alleging that off-leash dogs had prevented them from visiting the park for fear of being knocked over or attacked by dogs or verbally abused by dog owners, or that they had experienced these situations in visits to the park.

In the year following the GGNRA Citizens' Advisory Commission meeting, park staff attempted to facilitate the transition into compliance with 36 CFR 2.15(a)(2) through educational outreach, new signs, and law enforcement actions including verbal and written warnings. When these measures failed to bring about compliance with the regulation, GGNRA law enforcement staff issued citations in addition to warnings. During this time, conflicts between dog walkers and park staff increased significantly.

In 2004, citations issued for off-leash dog walking at Crissy Field were challenged. Similar to the Fort Funston dog walking case, the federal district court found that the NPS did not have the authority to enforce 36 CFR 2.15 requiring that dogs be on leash, in areas that had allowed off-leash dog walking per the 1979 Pet Policy, without first completing notice and comment rulemaking as required under 36 CFR 1.5(b) due to the controversial nature of the closure (U.S. v. Barley, 405 F.Supp. 2d 1121 (N.D. Cal. 2005)).

Since that time, GGNRA has had a mixture of dog management regulations and legal conditions guiding the status of dog walking in the park: the NPS-wide leash regulation, the GGNRA Compendium, the special regulation for protection of the federally threatened western snowy plover (*Charadrius alexandrinus nivosus*), and the 1979 Pet Policy voice control conditions (which were effectively reinstated by the 2005 federal court decision). Table 1 summarizes current dog management conditions within the specific park sites addressed in this final plan/EIS. Maps located in the "Maps" section of this document, which show park sites by county, from north to south, also illustrate historic and current dog walking management (see maps 2-A, 3-A, 4-A, etc.).

TABLE 1. CURRENT DOG MANAGEMENT CONDITIONS

Golden Gate National Recreation Area Site*	Alternative A: No Action (represents 36 CFR 2.15, 36 CFR 7.97(d), 1979 Pet Policy, and Golden Gate National Recreation Area Compendium)
Stinson Beach: parking lots/picnic areas only	On leash only
Homestead Valley	Entire site on leash or under voice control
Alta Trail / Orchard Fire Road / Pacheco Fire Road	On leash or under voice control from Marin City to Oakwood Valley
Oakwood Valley	Oakwood Valley Fire Road And Oakwood Valley Trail from junction with Fire Road to junction with Alta Trail: on leash or under voice control Oakwood Valley Trail from trailhead to junction with Oakwood Valley Fire Road: on leash
Muir Beach	Beach only: on leash or under voice control Bridge and path to beach: on leash
Rodeo Beach / South Rodeo Beach	Both beach areas only: on leash or under voice control Footbridge and access trail to beaches: on leash
Marin Headlands Trails Trails previously opened to dog walking, including but not limited to: • Coastal Trail from McCullough Road to Muir Beach • Miwok Trail from Tennessee Valley to Highway 1 • County View Road off the Miwok Trail • Miwok Trail to Wolf Ridge to Hill 88 • Lagoon Trail • South Rodeo Beach Trail	On leash or voice control: • Coastal Trail: Golden Gate Bridge to Hill 88, including Lagoon Trail • Coastal, Wolf, Miwok Loop • Old Bunker Fire Road Loop (includes section of Coastal Trail) On leash only: • Coastal Trail: Hill 88 to Muir Beach • Batteries Loop Trail • North Miwok Trail • County View Road
Fort Baker	On leash in areas where dogs are allowed
Upper and Lower Fort Mason	On leash
Crissy Field Wildlife Protection Area (WPA)	Voice control except for seasonal leash restriction

Golden Gate National Recreation Area Site*	Alternative A: No Action (represents 36 CFR 2.15, 36 CFR 7.97(d), 1979 Pet Policy, and Golden Gate National Recreation Area Compendium)
Crissy Field	Promenade (East Beach to the Warming Hut): voice control Crissy Airfield: voice control East and Central Beaches: voice control Trails and grassy areas near East Beach and around Old Coast Guard Station: voice control
Fort Point Promenade / Fort Point National Historic Site (NHS) Trails	Fort Point Promenade, Andrews Road, Presidio Promenade, Battery East Trail, and grassy area near restrooms: on leash
Baker Beach and Bluffs to Golden Gate Bridge	Beach North of Lobos Creek: voice control All trails except Batteries to Bluffs Trail: on leash
Fort Miley	East and West Fort Miley: voice control
Lands End	Voice control
Sutro Heights Park	On leash
Ocean Beach Snowy Plover Protection Area (SPPA) (Stairwell #21 to Sloat Boulevard)	Voice control with seasonal leash restriction
Ocean Beach	North of Stairwell 21: voice control South of Sloat Boulevard: voice control
Fort Funston (excluding areas closed by fence or signs)	Beach: voice control, with voluntary seasonal closure at the foot of northernmost bluffs when bank swallows are nesting (April 1-August 15) South of Main Parking Lot, including all trails: voice control North of Main Parking Lot, including all trails: voice control except for fenced wildlife/habitat protection area
Mori Point	On leash on all trails
Milagra Ridge	On leash on all trails
Sweeney Ridge / Cattle Hill (adjacent properties that share a trail system)	Sweeney: on leash on Sneath Lane, Sweeney Ridge Trail, and Baquiano Trail Cattle Hill: not yet part of GGNRA
Rancho Corral de Tierra	On leash where dogs are allowed (Montara and El Granada areas)

* Under current management, commercial dog walking occurs, but is not an authorized use.

ADVANCE NOTICE OF PROPOSED RULEMAKING

In January 2002 the park published an Advance Notice of Proposed Rulemaking (ANPR) in the Federal Register asking for comment on potential options for future dog management in GGNRA that could include a special regulation for dog walking in GGNRA. During the public comment period, park staff held two informational meetings about the rulemaking process in March 2002 and a public oral comment session in April 2002. Through the ANPR and public comment process, the park asked for public input on a range of dog management questions and put forth two management options for comment: option A, which would continue to enforce the existing NPS regulations that allow only on-leash dog walking; and option B, which would begin the analysis and eventual rulemaking to allow some specific off-leash use areas. Option A indicated that the park would consider allowing on-leash dog walking in some areas where it was not permitted at the time. These areas included Stinson Beach, Fort Baker Pier, Phleger Estate, and portions of Tennessee Valley. The public was also asked for input on specific management questions, including which areas should be closed to dogs, which areas should be fenced, which areas

should allow on-leash dog walking, and which areas should allow dogs under voice control. Additional questions asked how the number of dogs should be limited, how to ensure the park was not liable for injuries caused by or to dogs, and what the potential environmental impacts of the alternatives might be.

In response to the ANPR in January 2002, the park received 8,580 documents and the results were published in a public comment analysis report by the Northern Arizona University Social Research Laboratory (NAU 2002a, 1). In this report, 71 percent of public comments favored option B, allowing for off-leash dog walking in selected GGNRA sites. Of the 71 percent, the majority were residents of San Francisco (88 percent of 4,222 comment documents). Twenty-eight percent of public comments favored option A, calling for the enforcement of existing leash laws in the GGNRA. Respondents from out of state overwhelmingly voted for option A (96 percent of 1,186 comment documents). Fort Funston, Crissy Field, and Ocean Beach were the sites most frequently mentioned by those preferring either option A or option B (NAU 2002a, 5, 7).

In response to the ANPR request for input on specific management questions, the public made the following suggestions for future management of dog walking in GGNRA, which were coded into the dataset of the public comment analysis report (NAU 2002a, 9-26):

- Separate dog walking under voice control from other visitor uses.
- Designate specific areas, or days, and times when dog walking under voice control is allowed.
- Fully enforce whatever regulations result, but if violations occur, do not assume that all dog owners are irresponsible and that areas need to be closed to dogs.
- Create a licensing process to demonstrate that dogs are under voice control.
- Fence environmentally sensitive areas or fence voice control areas.
- Limit the number of dogs on leash and/or under voice control per person.
- Encourage volunteer efforts to assist in stewardship of voice control areas.
- Educate the public about how to control dogs and about the impacts dogs have on park resources.
- Monitor the impacts of dogs and report the results every few years.

Telephone Survey

To gain as broad an understanding of public opinion as possible, GGNRA commissioned Northern Arizona University's Social Research Laboratory to conduct a telephone survey in the four-county region surrounding GGNRA regarding NPS pet management regulations (NAU 2002b, 1). The survey design was initiated in the spring of 2002 during the ANPR public comment period and was conducted from May to July 2002. The survey was conducted with a random cross section of people from 400 households each (for a total of 1,600) in Alameda, Marin, San Francisco, and San Mateo counties to provide a more general overview of public support for or opposition to off-leash dog walking. Results of the telephone survey showed that 28 percent of the respondents owned or cared for one or more dogs. Among these dog owners, 50 percent had taken their dog(s) to a GGNRA site and 20 percent of that group had also hired a commercial dog walker to walk their dog(s) in a GGNRA site, which translates to one percent of all survey respondents using a commercial dog walker (NAU 2002b, 16-17).

The first set of questions asked the public if they generally supported or opposed the existing NPS regulation that allows on-leash dog walking at most GGNRA sites and prohibits any off-leash dog walking. Seventy-one percent of all respondents supported and 23 percent opposed the current NPS regulation for walking dogs on leash at most GGNRA sites and prohibiting off-leash dog walking. Survey results indicated that support for the existing NPS pet regulation was consistent throughout the four counties and across every demographic subset (NAU 2002b, 11, 83-86).

In another set of questions, when asked whether they specifically supported allowing off-leash dog walking in GGNRA, 40 percent of all respondents stated that they supported allowing dogs off leash in GGNRA. Of this 40 percent, 17 percent strongly supported and 23 percent somewhat supported allowing dogs off leash in GGNRA. Fifty-three percent of all respondents stated that they opposed allowing off-leash dog walking in GGNRA sites. Of this 53 percent, 17 percent opposed and 36 percent strongly opposed allowing off-leash dog walking in GGNRA sites. However, dog owners were closely divided on the question of whether they specifically supported allowing off-leash dog walking in GGNRA. Fifty-one percent of dog owners supported and 45 percent of dog owners opposed off-leash dog walking at GGNRA sites (NAU 2002b, 25).

The respondents were then read an abbreviated version of the GGNRA mission statement: “The mission of the Golden Gate National Recreation Area is the preservation, unimpaired, of the natural and cultural resources, and scenic and recreation values, of the park for present and future generations to enjoy” (NAU 2002b, 30). When these respondents were again asked if they supported or opposed off-leash dog walking at GGNRA sites, the percentage of all respondents in the four-county area opposing off-leash dog walking at GGNRA rose from 53 to 58 percent, and the percentage of respondents supporting off-leash dog walking in the park fell from 40 to 36 percent (NAU 2002b, 30-31).

Federal Panel Recommendation

Subsequent to the ANPR, a panel of senior NPS officials from outside GGNRA was convened to review the public comment and other technical information. The purpose of the panel was to recommend to the Superintendent of GGNRA whether the park should proceed toward rulemaking to allow some off-leash dog walking or whether the current regulation—requiring that pets be on leash in all GGNRA areas where they are allowed—should remain in effect. The panel concluded that off-leash dog walking in GGNRA may be appropriate in selected locations where park resources would not be impaired if the standards for appropriate use (as defined in NPS policies and regulations) could be met, if adverse impacts to park resources could be adequately mitigated, and if public safety incidents and public use conflicts could be appropriately managed. The panel further recommended that the park pursue both rulemaking and comprehensive planning for pet management to address suitable locations and proper management strategies. Options for conducting an integrated rulemaking and planning process were included, as well as suggested criteria for formulating a proposed rule and implementation strategy. As a result of the federal panel review, public comment, and other internal park discussions, GGNRA chose to pursue negotiated rulemaking under the *Negotiated Rulemaking Act*.

Negotiated Rulemaking

In June 2005, a NOI to Establish a Negotiated Rulemaking Committee was published in the Federal Register, followed by a Notice of Establishment of the Committee in February 2006.

In 2004 the NPS, working with the U.S. Institute of Environmental Conflict Resolution, hired a neutral team to assess the prospects for using a negotiated rulemaking process that would allow a representative group of stakeholders to have significant, direct input into the development of a special regulation for dog management at GGNRA. In June 2005, a Notice of Intent (NOI) to Establish a Negotiated Rulemaking Committee (Committee) was published in the Federal Register, followed by a Notice of Establishment of the Committee in February 2006. The Committee was composed of 19 primary representatives and alternates representing three informal caucuses—voice control advocates, environmental and conservation organizations, and other park users—as well as the NPS. The Committee's goal was to reach consensus on a special regulation on dog management at GGNRA and recommend that regulation to the NPS. The Committee held seven full Committee meetings and nine Technical Subcommittee meetings between March 2006 and October 2007. The Committee was only able to reach consensus on nine guiding principles, guidelines for commercial dog walking, and a site-specific alternative for Oakwood Valley (Marin County). It was not able to reach consensus on a proposed special regulation for dog management at GGNRA. A report summarizing the negotiated rulemaking process, products, and outcomes; negotiation structures, strategies, and approaches; and dynamics was prepared by the Facilitation Team of the Committee (Bourne et al. 2008, 1).

The NPS intent was to use the negotiated rulemaking process to provide public input for potentially drafting a special regulation for dog management in GGNRA. Since the Committee was not able to recommend a proposed regulation, the NPS will develop a rule for dog management. The findings of this final plan/EIS will inform the development of the regulation.

Dog Management Plan / Environmental Impact Statement

The plan/EIS is required prior to implementation of a new regulation for dog management at GGNRA.

The plan/EIS is required prior to implementation of a new regulation for dog management at GGNRA. During the period when the Committee was being formally created, the park began its required environmental planning process under NEPA. In late January 2005, GGNRA park staff and consultant specialists met with the NEPA team from the NPS Environmental Quality Division to draft the purpose, need, and objective statements to identify existing management problems and begin drafting possible solutions in the form of conceptual alternatives. This "internal scoping" is a process that can take many months and usually ends with publication in the Federal Register of a NOI to prepare an EIS and to hold meetings to gather public comment. The GGNRA NOI to prepare an EIS was published February 22, 2006.

GGNRA committed to having the NEPA and negotiated rulemaking processes proceed concurrently, to facilitate the sharing of information between the two processes and to allow any consensus from the negotiated rulemaking process to be fully analyzed along with a range of reasonable alternatives before choosing a preferred alternative. Additionally, since negotiated rulemaking requires that meetings of the full Committee be open to the public and has other fact-finding requirements that overlap with those of NEPA, the concurrent completion of both processes helped avoid duplication of effort and saved time.

A draft plan/EIS was released on January 14, 2011, and public comment was open until May 30, 2011 (136 days). As a result of substantive public comments, NPS determined that a number of changes to the draft plan/EIS would be necessary to be responsive to public comment. These changes include the following:

- the addition of new data (including additional law enforcement and visitor use data)
- new references
- additional *Federal Rehabilitation Act* information
- changes to the impacts analysis (including additional analysis of potential redistributive effects of opening/closing areas to dog walking)
- changes to the compliance-based management strategy (now referred to as the monitoring-based management program) by including natural and cultural resource monitoring and removing automatic triggers and restrictions
- evaluation of additional fencing as a method to minimize dog walking impacts
- relatively minor changes to each site specific preferred alternative
- the addition of site-specific alternatives and analysis of a site recently transferred to GGNRA, Rancho Corral de Tierra.

When significant new information or substantial changes to the proposed action occur that are relevant to environmental concerns, a supplemental EIS (SEIS) should be prepared (Council on Environmental Quality (CEQ) NEPA Regulations, 40 CFR 1502.9(c)). Therefore, NPS prepared a draft plan/SEIS to address the changes to the draft plan/EIS. The draft plan/SEIS also gave the NPS the opportunity to hear comments from the public on the new information before NPS issues a Notice of Proposed Rulemaking, the final plan/EIS and record of decision, and final rule.

A draft plan/SEIS was released on September 6, 2013, and public comment was open until February 18, 2014 (165 days). In addition to addressing the changes identified above, the draft plan/SEIS identified an NPS preferred alternative (alternative F) that would best meet the GGNRA objectives for managing dogs. As a result of substantive public comments on the draft plan/SEIS and to address updates needed in the final plan/EIS, NPS determined that a number of changes to the preferred alternative would be necessary to be responsive to public comment. The proposed rule incorporated these changes and was available for public review and comment for 60 days (February 24, 2016, to April 25, 2016). During that time, the NPS received more than 4,100 pieces of correspondence. Each comment was read and analyzed. The preferred alternative in this final plan/EIS reflects comments on the draft plan/SEIS and the proposed rule. More details on the changes to the preferred alternative can be found in chapter 2, in the section "National Park Service Preferred Alternative (F)." In addition to changes to the preferred alternative, this final plan/EIS includes changes and or corrections to trail and road names. These changes include the following and are reflected in this final plan/EIS:

- Addition of conditions for walking four to six dogs under an NPS permit
- Changes to two voice and sight control areas (VSCAs) (formerly known as regulated off-leash areas, ROLAs): Crissy Airfield and upper Fort Funston
- Addition of four new trail segments for on-leash dog walking (Rancho Corral de Tierra)
- Addition of clarifying definitions
- A few minor adjustments to dog walking areas based on new information or public suggestions

- Clarified considerations for the Monitoring Management Program
- Updated and corrected trail and road names; in some cases, these are different from the names used in the draft plan/SEIS
- Two scenarios under which dog walking opportunities may be expanded, including addition of authority for the superintendent to determine whether to allow dogs on-leash where the park adds new trails within the 22 locations.

This final plan/EIS examines the impacts of a full range of alternatives for dog management, and assesses the impacts that could result from continuing current dog management practices. Upon conclusion of this decision-making process one of the alternatives, or an alternative composed of elements of a number of the alternatives, will be selected for implementation, which will guide future park actions related to dog management.

Current Dog Management

Current dog management in the park is based on a number of factors. Areas covered by the GGNRA Citizens' Advisory Commission 1979 Pet Policy (appendix A) are managed in accordance with the June 2, 2005, decision by U.S. District Court for Northern California Judge Alsup (*U.S. vs. Barley* decision, 405 F.Supp.2d 1121 (N.D. Cal. 2005)) affirming that GGNRA cannot enforce the NPS-wide regulation requiring on-leash walking of pets (36 CFR 2.15(a)(2)) in areas that were included in the 1979 Pet Policy until notice and comment rulemaking under Section 1.5(b) is completed. In response, GGNRA revised its enforcement position to reflect that court decision, removing "leash required" signs in areas that had been selected for voice control in the 1979 Pet Policy and limiting enforcement of the NPS leash regulation to areas that were not included in the 1979 Pet Policy or that were identified as on-leash dog walking areas in the 1979 Pet Policy. However, in all areas where dog walking is allowed in GGNRA, whether under the NPS leash regulation or the 1979 Pet Policy, on-leash dog walking regulations that address areas closed to pets, disturbance to wildlife, removal of pet waste, and creating a hazardous or offensive condition have remained in effect and are being enforced.

In addition, many park areas have been closed to dog and visitor use for resource or safety reasons through the GGNRA Compendium (NPS 2016), although areas closed where dog use had traditionally occurred were closed pursuant to notice and comment rulemaking. The closures are reviewed and updated each year. The GGNRA Compendium is the format wherein each park, where allowed by the CFR, can publish park-specific regulations to protect cultural or natural resources, enhance public health or safety, or avoid conflict among visitor use activities. It is considered the responsibility of park visitors to know park rules and regulations before they visit any park.

Protection for the Western Snowy Plover

Protection Area Sign at Ocean Beach

Credit: NPS

The western snowy plover was listed as a threatened species under the federal *Endangered Species Act* (ESA) in 1993 due to loss of habitat by encroachment of non-native vegetation, predation, disturbance from recreational use of beaches, and development. The plover's threatened status affords it protection from harassment, defined under the ESA as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering."

The NPS *Management Policies 2006* (NPS 2006a, 45) provide guidance to the NPS for the management of threatened and endangered species. Section 4.4.2.3 states, "The Service will survey for, protect, and strive to recover all species native to national park system units that are listed under the ESA. The Service will fully meet its obligations under the NPS *Organic Act* and the ESA to both proactively conserve listed species and prevent detrimental effects on these species."

The 2005 decision by Judge Alsup cited above noted that the court's action "in no way restricts the authority of the Superintendent to 'protect the resource,' including the protection of endangered and threatened species." Following notice and comment under 36 CFR 1.5(b), these actions can be taken through the GGNRA Compendium, wherein each park, where allowed by the CFR, can publish park-specific regulations to protect cultural or natural resources, enhance public health or safety, or avoid conflict among visitor use activities.

In November 2006, and again in 2007, the GGNRA Compendium amendments were signed to adopt emergency regulatory provisions for protection of the federally threatened western snowy plover on portions of Crissy Field and Ocean Beach, which had been reopened to off-leash use through the 2005 federal court decision. These seasonal use restrictions were necessary to provide an area of reduced disturbance for resting and feeding by the western snowy plover. The restrictions required that pets be walked on leash during the time the plovers overwinter (July–May, or until monitoring determines the species is no longer present). In 2007, the park initiated a notice and comment rulemaking process to provide a special regulation to ensure ongoing seasonal protection for the western snowy plover in two areas, Crissy Field WPA and Ocean Beach SPPA, until long-term dog management for those areas is addressed in the rule resulting from this final plan/EIS.

A Final Rule (36 CFR Part 7.97(d)) for the protection of the western snowy plover came into effect October 20, 2008. This rulemaking provides temporary protection for plovers in the Crissy Field and Ocean Beach protection areas until a permanent determination is made through this planning process for a new regulation for dog management for the entire park.

CURRENT DOG MANAGEMENT ISSUES AND IMPACT TOPICS

At the internal scoping session held in January 2005, observations of current issues surrounding dog walking generally fell into the following categories, some of which are described in more detail in the paragraphs below:

- Expectations and views of dog walkers and other visitors
- Impacts of dogs on cultural and natural resources in the park
- Visitor use and experience
- Employee, visitor, and dog health and safety
- Needs of urban area residents
- Public confusion over NPS-wide dog regulation, GGNRA-specific rules, NPS mission and policies
- Public lack of understanding and confusion over regulations for dogs at GGNRA park sites, including why some park areas are completely closed to dogs while other areas allow on-leash dog walking
- Visitor noncompliance with regulations
- Ability of law enforcement staff to enforce rules.

EXPECTATIONS AND VIEWS OF DOG WALKERS AND OTHER VISITORS

Dog Walkers at Fort Funston

Credit: NPS

As stated previously and in response to the ANPR in January 2002, a public comment analysis report was published (NAU 2002a, 1). In this report, 71 percent of public comments favored allowing off-leash dog walking in selected GGNRA sites (option B) and 28 percent of public comments favored the enforcement of existing leash laws in the GGNRA (option A) (NAU 2002a, 5). Also in the public comment analysis report, approximately 10 percent of the documents (984 of 8,580 documents) mentioned the sociability benefits that off-leash dog walking provided, not only for the dog owners, but for the dogs themselves (NAU 2002a, 16-17). Other respondents cited the "therapeutic value" dog owners experienced in knowing that their pets had been well exercised. More than 500 dog walkers affirmed their belief that it is their right to walk dogs off leash at park sites. Other reasons given in support of off-leash dog walking concerned the benefits to humans, including increased sociability with other dog walkers or with visitors who enjoyed interacting with dogs, and the safer feeling some dog owners have when they visit urban parks, especially at night, if their dogs are present (NAU 2002a, 17-20). Those respondents in favor of enforcing the leash law stated concerns for the environment, human health and safety, and the longevity of the park for the enjoyment of future generations. Nearly half expressed discomfort or fear of off-leash dogs and over 1,180 felt that allowing an exception to the NPS rules would set a negative

precedent in other NPS units, giving "dog owners the excuse they want to continue to not obey laws and create confusion and conflict" (NAU 2002a, 9-15).

In addition to the ANPR public comment analysis report, a telephone survey regarding NPS pet management regulations was also conducted, which was discussed in more detail previously (NAU 2002b, 1). The results of the telephone surveyed showed that 71 percent of all respondents supported and 23 percent opposed the current NPS regulation for walking dogs on leash at most GGNRA sites and prohibiting off-leash dog walking (NAU 2002b, 11). When asked whether they specifically supported allowing off-leash dog walking in GGNRA, 40 percent of all respondents stated that they supported allowing dogs off leash in GGNRA and 53 percent of all respondents stated that they opposed allowing off-leash dog walking in GGNRA sites; after hearing the abbreviated GGNRA mission statement, the 53 percent rose to 58 percent opposition (NAU 2002b, 11).

IMPACTS OF DOGS ON NATURAL AND CULTURAL RESOURCES IN THE PARK

A preliminary list of issues and impact topics was developed at the internal scoping meeting. This list was further reviewed by the NPS and the public and eventually became the list of issues and impact topics that were analyzed in the draft plan/EIS, the draft plan/SEIS, and in this final plan/EIS. NEPA and resource specialists used a screening form to determine which resources might experience more than minor adverse or beneficial impacts. The form was also used to aid in determining whether the appropriate NEPA document should be an EIS or an environmental assessment (EA). Because several factors that could have significant effects are present, the group confirmed that an EIS was appropriate to evaluate dog management options at GGNRA. The impact topics are presented in the following paragraphs by resource. These potential effects are particularly problematic for GGNRA, a unit of the NPS, an agency whose fundamental purpose is to conserve park resources and values, a requirement separate from the mandate that prohibits impairment of park resources and values (NPS 2006a, 10-11).

Vegetation and Soils

Issue. Dogs, particularly those off leash and without adequate voice control, can affect vegetation and soils. As a result of recreational activities, vegetation can be affected by trampling indirectly through the consolidation of the soil and directly by treading upon the plant itself (Bates 1935, 476). Trampling initially bends and weakens leaves and branches and can ultimately cause breaking and injury to the plant (Douglass et al. 1999, 9.3; Bates 1935, 476). Some plant species can be damaged and completely destroyed by the action of treading, while other species are comparatively immune to harm of this kind (Bates 1935, 476). Vegetation along trails is particularly vulnerable to damage (Cole 1978, 281). Sensitive environments can be subject to physical disturbance by dogs (through digging or bed-making). Physical disturbance by dogs could affect vegetation, soils, and wildlife such as small mammal populations (Sime 1999, 8.9). "High foot traffic (both people and dogs) resulting from an off-leash area would result in trampling and disturbance of vegetation" (Andrusiak 2003, 5). In addition, heavy off-leash dog use increases deterioration of native dune communities (Shulzitski and Russell 2004, 5). Data from regional parks included observations of dogs in the water and uprooting beach and dune vegetation by digging (Andrusiak 2003, 3.2). Both dog and human traffic compact the soil and crush vegetation; this is unlikely to have significant effects on the unvegetated areas, but could contribute to degradation of vegetated areas (Andrusiak 2003, 3.2).

Issue. Dog waste contains nutrients and can increase the amount of nitrogen and phosphorus in the soil (CRCCD 2009, 1). Soils and vegetation can be affected by dogs through defecation and urination, but although mentioned in reviewed studies, this has not been specifically documented in peer-reviewed studies. The act of "marking" (scent marking with urine) could also affect vegetation by concentrating nutrients in particular areas. Although nitrogen and phosphorus are nutrients required for plant growth,

dog waste could increase the amount of nutrients in the soil above natural levels. An increase in nutrients from dog excrement in concentrated areas could result in some areas becoming overfertilized and lead to changes in plant species and distribution as well as changes in soil organisms. Adding nutrients to nutrient-poor serpentine soils can alter soil chemistry, which may result in changes to the plants that occur in these soils (USFWS 1998a, I-12). At sites with serpentine soils, adding nutrients could change soil composition and eventually cause detrimental effects on sensitive plant species adapted to serpentine soils.

Issue. Dogs can be carriers of exotic plant seeds. Trailside plant communities usually contain locally occurring plant species and invaders from other sources, which are favored by the environmental conditions adjacent to trails (Cole 1978, 282). Dogs (as well as horses and hikers) can alter the dispersal of native and non-native plants along trail corridors, as seeds that adhere to their paws and fur are then transported to other locations, possibly resulting in the spread and establishment of new populations of invasive and/or non-native plants (Sime 1999, 8.9-8.10).

Wildlife

Issue. Intensive dog use of an area could disrupt its use by wildlife or degrade the habitat, resulting in a multitude of possible negative consequences for wildlife population viability. The adverse effects of intensive dog use, such as chasing and flushing wildlife or disrupting nesting and foraging sites, can range from direct to less direct disturbance from physical effects such as trampling of habitat, the temporary or permanent loss of preferred habitat, and scent intrusion into predator territory. Domestic dogs behave as carnivores and at some level, still maintain instincts to hunt or chase (Sime 1999, 8.2) and are capable of catching and killing prey species (Lenth et al. 2008, 218). “Even if the chase instinct is not triggered, dog presence in and of itself may be an agent of disturbance or stress to wildlife” (Sime 1999, 8.3; Lenth et al. 2008, 218).

Issue. Dog play can compact the soil and trample vegetation, causing degradation to habitat for wildlife as discussed above. Emergent aquatic vegetation along the edge of watercourses and wetlands provides critical habitat for some listed species, and disturbance of this vegetation from dog play, such as by trampling, could compromise its value to wildlife or dislocate amphibian egg masses.

Issue. Dogs or dog waste can infect wildlife and vice versa. Domestic dogs that are not vaccinated can potentially introduce diseases (distemper, parvovirus, and rabies) and transport parasites from, or transmit diseases to, wild animals or wildlife habitats (Sime 1999, 8.2), although the role of dogs in wildlife diseases is not well understood (Sime 1999, 8.4). Dog-related viruses may be transmitted through dog feces to marine and terrestrial mammals (MDNRE 2010, 1; MVM 2008, 1). Canine distemper affects wildlife including canids (wolves, foxes, coyotes), raccoons, and mustelids (otters, badgers, and skunks) (MDNRE 2010, 1). Domestic dogs can be vectors for transmission diseases such as canine distemper, which can affect wild carnivore species (Sime 1999, 8.9). Studies have shown that proximity to urban areas or contact with humans and their pets can increase the risk of disease exposure for wild carnivore populations (e.g., canine parvovirus in foxes and feline calicivirus in bobcats) (Riley et al. 2004, 12, 18). However, the collection of dog waste and reducing feral and unaccompanied domestic animals in parks could help reduce the risk of transmission of many diseases (Riley et al. 2004, 19).

Issue. Habitat for all wildlife, including habitat for rare, unusual, or sensitive non-listed and/or monitored species may be affected by dog use of specific areas through disturbance, displacement, and habitat alteration. As a result of repeated disturbance, wildlife may relocate from preferred habitat to other areas to avoid harassment (Sime 1999, 8.4). However, animals with no suitable habitat nearby will be forced to remain despite the disturbance, regardless of whether this will affect survival or reproductive success (Gill et al. 2001, 266).

The shoreline of San Francisco Bay provides feeding, roosting, and wintering habitat for shorebirds and other bird species, such as gulls, terns, and the California brown pelican (*Pelecanus occidentalis californicus*). Resting and feeding habitat can be particularly important to migrating and overwintering shorebirds, and in some areas in GGNRA, thousands of roosting or migrating individuals congregate. Beach habitat within GGNRA is also used by over 25 species of shorebirds, including the federally threatened western snowy plover (Beach Watch 2009, 1; USFWS 2009a, 1). Although a variety of factors, including humans, cause disturbance, numerous studies have shown that shorebirds are particularly sensitive to dogs and have documented disturbance to shorebirds as a result of dogs at recreational/park settings (Kirby et al. 1993, 55; Smit and Visser 1993, 10; Yalden and Yalden 1990, 248-249; Thomas et al. 2003, 69; Lafferty 2001a, 1955-1956; Lafferty 2001b, 318; Lafferty et al. 2006, 2222; Burger et al. 2004, 287; Davidson and Rothwell 1993, 101). Frequent disturbance of shorebirds can affects fat reserves needed for migration and breeding. This type of disturbance could result in loss of preferred habitat as well as energy loss to migrating and wintering shorebirds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. Even short-term disturbances to feeding and migration behavior could potentially affect energy expenditure in shorebirds (Kersten and Piersma 1987, 182, 185).

Species of Special Concern (Federally and State-listed Species or Species Proposed for Listing)

Issue. Habitat used by federally threatened or endangered species may be vulnerable to impacts from intensive use of public areas by humans and dogs. GGNRA contains more federally protected endangered and threatened species than any other unit of the national park system in continental North America (NPS 2009a, 1). There are over 80 rare or special-status wildlife species currently identified as permanent or seasonal residents of the park or dependent on park lands and waters for migration, and there are 38 rare or special-status plant species currently identified within GGNRA (NPS 2009a, 1). Although habitats at GGNRA support many species with special status, only those species potentially affected by this final plan/EIS are discussed in this document. Of the 38 listed plant species, 7 are state and/or federally listed and have a detailed impacts analysis in this final plan/EIS. This group includes but is not limited to the following listed plants: Presidio (Raven's) manzanita (*Arctostaphylos hookeri* ssp. *ravenii*), Presidio clarkia (*Clarkia franciscana*), Marin western flax (*Hesperolinon congestum*), and San Francisco lessingia (*Lessingia germanorum*). Habitat for each exists in patches of coastal dune or coastal scrub/chaparral/grasslands, which have become increasingly rare and whose existence has been compromised by events caused by both humans and nature. Of the 80 listed wildlife species, 12 are state and/or federally listed and have a detailed impacts analysis in this final plan/EIS. This group includes but is not limited to the following: mission blue butterfly (*Icaricia icarioides* ssp. *missionensis*), tidewater goby, coho salmon, steelhead trout, California red-legged frog, San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), bank swallow, and western snowy plover.

Visitors with dogs can affect special-status species through disturbance to wildlife and/or plants from chasing, barking, digging, and potential direct or indirect mortality as a result of encounters. In addition to direct impacts from dogs on habitat for listed species, indirect impacts as a result of dogs can also occur. For example, dogs can trample upland vegetation such as lupine plants along the edges of trails, which are host plants for the federally endangered mission blue butterfly.

Beach nesting bird species are presumed to be the most sensitive species to disturbance and several species, particularly coastal plovers in the genus *Charadrius*, are endangered or threatened (Lafferty 2001b, 315) and are very likely to leave an area altogether if disturbed (Kirby et al. 1993, 56-57). The federally threatened western snowy plover overwinters on wide, sandy beaches to build energy reserves for migration and breeding. Within GGNRA, this includes the SPPA at Ocean Beach and the WPA at Crissy Field. Monitoring data at the site have demonstrated that disturbance of western snowy plovers by

off-leash dogs has increased in the Crissy Field WPA following the *U.S. v. Barley* decision (NPS 2006b; NPS 2008a, 2). At GGNRA, there have been multiple instances where dogs flushed or chased shorebirds or snowy plovers at Ocean Beach and Crissy Field as documented in NPS monitoring reports by the Natural Resources Division (NPS 2008a; Hatch et al. 2007a, 12; Hatch et al. 2007b, 4-6; Hatch et al. 2008, 2-4). Even though western snowy plovers do not nest at GGNRA, general impacts on the western snowy plover from dogs include chasing roosting or feeding shorebirds which causes shorebirds to expend energy, resulting in disturbance and/or harassment. Frequent disturbance of this type can affects fat reserves needed for migration and breeding. This type of disturbance could result in loss of preferred habitat as well as energy loss to migrating and wintering shorebirds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction.

Freshwater, brackish-water, and marine environments in GGNRA are habitat for the two listed salmonids, coho salmon (federally endangered and state endangered) and steelhead trout (federally threatened), and the federally listed endangered tidewater goby. These salmonids are visual feeders, and extended periods of high turbidity following dog play in ponds or creeks can result in reduced foraging time or success for these species. Male gobies dig breeding burrows in the spring after their lagoon habitat closes to the ocean (USFWS 2005a, 13). The habitat of the federally listed endangered tidewater goby can also be affected by dogs playing in water, as dogs may crush breeding burrows.

Park Operations

Issue. Park staff, time, and money would be needed to manage any existing or future dog policies. Managing current dog walking policies in the park requires significant staff time for GGNRA law enforcement, maintenance of heavily used dog walking areas, and response to visitor concerns and complaints.

Issue. Park staff, time, and money are also needed to protect natural resources from dogs, including installation of protection measures such as fencing and signage; monitoring and maintenance by park staff would then be required for these protection measures.

Cultural Resources

Issue. Dogs may affect cultural resources by dog-related ground disturbance such as digging and/or trampling, which would be a contributing element to natural erosion processes on or around sensitive cultural resources.

Issue. Dog urination/defecation may affect cultural resources by affecting vegetation associated with historic properties.

Land Use / Long-term Management of Resources or Land

Issue. Dog use can damage resources that cannot be easily restored. Overuse by dogs can change the character of soils, vegetation, wildlife habitat, and the species of wildlife themselves. If these areas are affected by intense use over a long period of time, or if natural resources are particularly vulnerable to change or damage, the impacts caused by dogs can preclude restoration.

Issue. Dog management policy at GGNRA may impact or influence local, state, and federal policy at other parks and open space in the Bay Area, and this final plan/EIS has the potential to set a precedent for the NPS nationwide. Open spaces for recreation add to the quality of the urban environment, but the park must serve a variety of visitor needs. Because the San Francisco Bay Area is highly urbanized, dog owners may have only minimal options for exercising their dogs outdoors. In many parts of the San

Francisco Bay Area, residents have come to expect that GGNRA lands will be available for dog walking and other recreational activities. These factors result in a high concentration of dog walkers among other visitors who engage in a variety of activities, which often leads to conflicts. California State Parks and San Mateo County Parks, as well as the rest of the national park system, have more restrictive dog-use policies than those currently in place at GGNRA. The comparatively relaxed regulations on GGNRA lands may attract visitors with dogs from other areas that have more restrictive policies. Such a concentration of dogs and dog owners within GGNRA lands would amplify the negative effects of dogs and their owners on the park. Maintaining relatively relaxed restrictions at GGNRA could reduce pressure on regional parks, as dog walkers would continue to be able to use GGNRA for dog walking, whereas tightening restrictions at GGNRA could increase pressure to lessen restrictions at regional parks to provide dog walking opportunities. Even though the less restrictive rules at GGNRA may create some pressure in other NPS units to review the existing NPS-wide 36 CFR 2.15(a)(2) leash regulations, GGNRA is a unique situation and NPS is unlikely to revisit its servicewide regulation for pets in other units. While it creates precedent in being the only unit allowing off-leash use, the precedent will be contained to this one unit.

VISITOR USE AND EXPERIENCE

Visitor experience represents the range of experiences a visitor might have, whether it be for recreational, educational, or scientific purposes, as well as the mutual compatibility or exclusivity of such uses, and may include using a park's interpretative or educational services, regardless of where such use occurs (e.g., via internet access, library). It is possible that dog walking under voice control may be more of an "exclusive" than a shared use, although a document prepared to assess whether negotiated rulemaking was likely to succeed (U.S. Institute for Environmental Conflict Resolution 2004, 9) characterized this as an area of disagreement among those interviewed. The reasons it may be an exclusive use include visitor safety and experience. The paragraphs below discuss general impacts to visitor use and experience associated with aesthetics, soundscapes, and environmental justice.

Visitor Use and Experience—Aesthetics

Battery Davis
Credit: NPS

Issue. Dog walkers and visitors without dogs often come into conflict. Walkers, hikers, joggers, bicyclists, horseback riders, wildlife watchers, and those seeking a quiet and natural experience can all potentially be disturbed by running and barking dogs. During the public comment period for the draft plan/EIS, many park users noted disturbances associated with dogs. One commenter stated, "We are very frequent visitors to the GGNRA and long-time members of the Golden Gate Parks Conservancy. We love to hike, ride our bikes and enjoy the beaches. Dogs significantly detract from our enjoyment of the park areas" (NPS 2011a, Correspondence 431). On the contrary, many commenters pointed out that the view of dogs running around and enjoying themselves added to the visitor experience at GGNRA and removing dogs from the park would adversely impact their visitor experience. One commenter visits the park just to see the dogs, "I love dogs and am not allowed to have one in the apartment that I live in. I take walks at Fort Funston

so I am allowed to mingle with dogs, enjoy their diversity and get some exercise on top of it" (NPS 2011a, Correspondence 1090).

The potential for visitors to be bitten by dogs at GGNRA also exists and is discussed as part of employee, visitor, and dog health and safety, which follows this section. Some visitors prefer to visit a national park area without encountering dogs. Additionally, dogs may adversely affect the aesthetics of the park by leaving waste on beaches, trails, or near water resources, and the overwhelming smell of urine in park areas with heavy dog use (e.g., Fort Funston) may also affect visitor experience at the park. Although signs indicate that dog owners are responsible for picking up their dogs' waste, owners do not always comply. Park users also noted their concerns of dog waste during the public comment period. One commenter stated, "Besides their presence, dog-related litter is a significant problem. Although many owners pick up their dog's waste, there are those who do not. In fact nobody cleans up urine. [The] amount of dog urine, combined with feces that is not picked-up or remains after most of it is removed causes heavily used areas like Fort Funston to smell, thus making it unpleasant for visitors who are not dog owners" (NPS 2011a, Correspondence 4683). Various dog groups and associations have even organized dog cleanups, provided bags, and tried to influence their members; but despite these efforts, many dog owners still do not comply with picking up dog waste.

Visitor Use and Experience—Soundscapes

Issue. The natural sounds heard in GGNRA are a positive and valued park resource, as well as a component of the visitor experience, which dog barking may interrupt. Soundscapes within the park provide a variety of seasonally changing visitor experiences that are important to some park users as a refuge from the noise of the urban environment. An example is spring birdsong, which is most prevalent in more remote areas and along riparian and forested habitats. Other experiences—lapping waves and frog choruses—may also enrich the visitor experience. Walkers, hikers, joggers, bicyclists, horseback riders, wildlife watchers, and those seeking a quiet and natural experience and/or a national park experience without dogs can all potentially be disturbed (including park staff) by running, barking dogs—particularly by those that chase or harass people or wildlife. For example, the raucous sounds of a disturbed wildlife community—birds and small mammals giving alarm calls—also add to the disruption of the visitor's experience of the soundscape. These potential disturbances from barking dogs may change the natural character of the area and the overall visitor experience. During the public comment period for the draft plan/EIS, one commenter stated that the "Constant loud and disturbing barking of dogs" ruined their park experience (NPS 2011a, Correspondence 1467).

Visitor Use and Experience—Environmental Justice

Issue. Minority or low-income populations may be more negatively affected by off-leash dog walking than Caucasian, middle-income, or high-income populations. San Francisco County is a racially diverse area, with minority populations accounting for approximately 51 percent of the population. The largest minority group in the San Francisco area is people of Asian descent (33.3 percent), followed by Hispanic/Latino persons (15 percent) (U.S. Census Bureau 2012, 1). A phone survey conducted in 2002 by Northern Arizona University (NAU 2002b, 1) separated data by race and income as well as other variables, and found lower support from low-income families for allowing off-leash dog walking under voice control in GGNRA. The survey indicated that just over 13 percent of respondents with incomes lower than $50,000 strongly supported off-leash dog walking, whereas almost 22 percent of those with incomes from $50,000 to $100,000 and just over 20 percent of those with incomes over $100,000 strongly supported it. Racial differences were even more apparent, as only about five percent of African-American respondents strongly supported off-leash dog walking, whereas almost 17 percent of Caucasians and just over 20 percent of Asian-Americans supported off-leash dog walking. However, when the "strongly support" and "somewhat support" categories were combined, very few racial differences could be seen;

approximately 44 percent of African-American respondents, 40 percent of Caucasians and just over 37 percent of Asian-Americans supported (strongly and somewhat) off-leash dog walking in the telephone survey (NAU 2002b, 92-93). Also noteworthy is that 39.4 percent of respondents of Hispanic origin supported (strongly and somewhat) off-leash dog walking and 39.9 percent of respondents of non-Hispanic origin supported (strongly and somewhat) off-leash dog walking (NAU 2002b, 93). Therefore, the Hispanic and non-Hispanic populations supported off-leash dog walking by almost the same percentages. During the public comment period for the draft plan/EIS, some commenters noted the importance of off-leash dog walking by minority populations at the park. One commenter stated, "It is important to weigh the opinions of the ethnic "minorities" who actually go to the park to enjoy off-leash. The National Parks have a reputation of being unwelcoming to non-white ethnic groups. It would be a challenge to find a recreation that is more diverse than off-leash dog walking. Fort Funston has a better mix of Asians, Black Americans, Pacific Islanders, East Indian, etc. than you are likely to find elsewhere in the parks. Off- leash recreation is a success story in term of the National Parks being welcoming to ethnic minorities." (NPS 2011a, Correspondence 4592).

EMPLOYEE, VISITOR, AND DOG HEALTH AND SAFETY

Issue. GGNRA manages much of the publicly accessible San Francisco Bay and ocean coastal lands in San Francisco and Marin counties; park personnel have stated that the increased number of conflicts among park visitors is of great concern. Many of the issues related to the health and safety of visitors to the park and park employees are related to encounters with unruly or aggressive dogs. Reported incidents include being knocked down, intimidated, and bitten by dogs. Additionally, dog-on-dog bites and dog-on-horse bites often involve visitors who could be injured during these conflicts (e.g., attempts to separate dogs, horses bolting). The paragraphs below discuss statistics and issues regarding safety of employees (rangers, U.S. Park Police, and other employees of the park) and visitors from dogs.

Injuries to visitors from dogs jumping on them, chasing them, harassing them, or biting them are a serious concern, as are increased risks or hazards to rangers who rescue dogs or dog owners. The criminal incident reports for the years 2008 through 2011 recorded violations of 36 CFR 2.34 (a), "hazardous conditions," resulting for dog interactions at GGNRA. This category includes dog bites and/or dog attacks that have occurred at the park. There were a total of 95 dog bites/attacks at GGNRA sites from 2008 through 2011. Park staff members have been involved in rescues of both dogs and visitors from certain areas of the park, particularly from the coastal bluffs at Fort Funston (29 rescues occurring from 2008 through 2011). Rescues have also been performed at Ocean Beach, Marin Headlands Trails, Sutro Heights Park, and Baker Beach. There is a potential for ranger injuries to occur in the course of these rescues. If the owners had had their dogs leashed and under control, then many of these rescues could have been avoided.

From 2008 through 2011, GGNRA NPS rangers and U.S. Park Police (collectively referred to as law enforcement staff) recorded a total of 2,775 dog-related incidents for leash-law violations, dog bites or attacks, hazardous conditions or pet rescues, and failure to pick up pet excrement at GGNRA sites considered in the draft plan/SEIS. Of these citations, 510 violations occurred at Crissy Field and 969 occurred at Ocean Beach. A total of 1,487 reports of dogs in closed areas at GGNRA sites that are considered in the draft plan/SEIS were recorded by GGNRA law enforcement staff between 2008 and 2011. Of these, 729 reports were for dogs in the Ocean Beach SPPA and 283 reports for dogs in the Crissy Field WPA. Visitors have reported being jumped on and knocked down by unrestrained dogs. The park has had complaints from people who are so frightened of off-leash dogs that they avoid visiting the park entirely or visit only when least likely to encounter dogs (NPS 2002b, 3). During the public comment period for the draft plan/EIS, visitors expressed these concerns. One commenter stated, "I was bitten in the GGNRA by an off-leash dog. I did not report it but have just avoided the GGNRA since" (NPS 2011a, Correspondence 1649). Even leashed dogs can be frightening to some people when dogs

bark or strain at the leash. Conflicts between dogs walked under voice control and other visitors can be particularly intense along the beach areas of the park, as this area attracts large numbers of visitors, both with and without dogs, particularly on weekends and during the summer or on warm days. Visitors with children who play along the water's edge or in the sand and are approached by dogs, either aggressively or not, may feel that their child's safety may be at an elevated risk for dog bites or other injuries.

Dog-related incidents from 2012 through 2016 were categorized differently than those from 2008 through 2011. The 2012 through 2016 data includes violations for an animal complaint, dog bite, non-compliant dog walker, leash violations, and wildlife disturbance. An animal complaint can encompass different situations including complaints about barking dogs, dogs fighting, dogs left unattended, inappropriate contact with dogs, aggressive dogs, and lost dogs. Dog bites include a reported injury from a dog. A non-compliant dog walking violation is similar to violation of a closed area described above. In addition, leash violations and wildlife disturbance violations are the same as described above. The different categorization resulted from a NPS servicewide change in law enforcement reporting and tracking software and its implementation.

From 2012 through 2016, GGNRA NPS rangers and U.S. Park Police (law enforcement staff) recorded a total of 1066 dog-related incidents for animal complaints, dog bites, dog walkers in closed areas, violations of the leash law, dog/wildlife interactions, and resource violations. Of these citations, 232 occurred at Marin Headlands, 157 at Fort Funston, and 156 at Ocean Beach. A total of 421 reports of leash law violations, 165 dog walkers in closed areas, and 289 animal complaints that are considered in this final plan/EIS were recorded by GGNRA law enforcement staff between 2012 and 2016.

Issue. Guide dogs are at risk from off-leash dogs which can compromise the safety of the guided individual. Off-leash dogs can interfere with guide teams by attacking the guide dogs, threatening the physical and emotional well-being of guide dog teams. Even without physical injury, attacks and interference can negatively affect a guide dog's behavior and work performance. Following an attack, guide dogs may be unable to work because of physical injuries, and they may develop undesirable behaviors towards other dogs (Kutsch 2011, 6). During the public comment period for the draft plan/EIS, commenters noted concerns pertaining to the safety of guide dog teams. One commenter stated, "An unleashed dog rushing the guide dog team can make the guide dog skittish and afraid. That puts the guide dog team at risk. If the guide dog is more worried about being rushed by another dog, that guide is not doing its job and injury to both the guide dog and guide dog user could occur." (NPS 2011a, Correspondence 277).

Issue. A health concern associated with dog waste is pathogens that can infect humans if ingested. Organisms carried in dog feces include *Cryptosporidium*, *Giardia lamblia*, and *Salmonella*, which can induce symptoms ranging from skin sores to chest pain. Additionally, the bacteria called *Escherichia* can also be found in dog waste, and particular strains of some species of *Escherichia* are human pathogens, such as *E. coli*, commonly referred to as fecal coliform bacteria. Dog waste can also contain roundworms and other parasitic nematodes, which can cause fevers, bronchitis, asthma, or vision problems in severe infections (USEPA 2001, 2). Infection by any of these pathogens can occur through ingestion of contaminated sand, vegetation, or water.

Issue. Wildlife may transmit disease to dogs, and the quality of water where dogs play or drink may be poor. Dogs may pick up canine distemper virus and other diseases from infected wildlife. Wild birds, small mammals, and dogs can also introduce microorganisms into a water supply, and these microorganisms, algal blooms, and other naturally occurring phenomena can make dogs sick when they drink from affected streams or ponds.

Crissy Field and San Francisco

Credit: NPS

NEEDS OF URBAN AREA RESIDENTS

Because the San Francisco Bay Area is highly urbanized, dog owners may have access to few outdoor areas for exercising their pets. Additionally, the adjacent city, county, and state public lands have fewer areas available for dogs and/or more restrictions on these areas, so potential use by urban dog owners is therefore pushed onto NPS lands. For residents of San Francisco and Marin particularly, and increasingly for San Mateo residents, GGNRA lands are the "backyards" of the citizens, and residents have come to expect public lands to be made available for dog walking and other recreational activities. Also, as noted previously, the management and thus enforcement of laws, regulations, and policies for much of the beach and other coastal property in this highly urbanized area falls to the NPS. The coastal areas are highly popular parts of the San Francisco Bay Area, a region whose population is currently seven million and is expected to grow to eight million by 2020 (Adams et al. 2006, 40). The expectations of an increased number of visitors, many of whom expect to use the national park sites for their recreational needs, have increased management challenges for the present and future generations.

PUBLIC CONFUSION OVER NATIONAL PARK SERVICE-WIDE DOG REGULATION, GOLDEN GATE NATIONAL RECREATION AREA-SPECIFIC RULES, NATIONAL PARK SERVICE MISSION AND POLICIES

Off-leash, voice control dog walking has historically been allowed in some areas of GGNRA since before the park was established. This unofficial policy continued after the establishment of GGNRA for more than 20 years, and following the park's 2001 return to the NPS-wide regulation (36 CFR 2.15(a)(2)) requiring dogs to be walked on leash, some visitors were either unaware of the changes or were opposed to implementation of the rule and chose to ignore it. Additional confusion arose in 2005 when GGNRA reverted to the 1979 Pet Policy in response to the federal court decision barring enforcement of 36 CFR 2.15(a)(2) in areas contained in the 1979 Pet Policy until notice and comment rulemaking took place. Finally, in 2006, GGNRA enacted a special regulation requiring seasonal leash restrictions for protection of the federally threatened western snowy plover on sections of Crissy Field and Ocean Beach.

Further complication arises from the disconnected nature of GGNRA park sites, which are interspersed with other public lands managed by city, county, state, or regional agencies. Each agency has its own set of rules and regulations regarding dog walking, some of which differ from NPS regulations (see "State and Local Laws, Regulations, and Policies" at the end of this chapter), and geographical boundaries between agency jurisdictions are not always obvious.

Signs at Stinson Beach

Credit: NPS

The public may also be largely unaware of the laws, regulations, and policies that guide the NPS in management of lands and resources, such as the GGNRA Compendium (NPS 2001, 1). Members of the public may also not know that they must refer to the GGNRA Compendium, or to the park's web site, to find which areas are closed to dog walking (or closed to visitors). Adding to the possible confusion, closures may change from year to year, and portions of park sites, rather than an entire site, may be closed to the public for resource protection or visitor safety.

As the dog walking regulations changed, GGNRA staff worked to educate the public by distributing information cards and brochures, meeting with organized dog walking groups and asking them to inform their constituencies, updating the park web site, media interviews and, particularly in 2001 and 2002, handing out free leashes to encourage adherence with the NPS leash requirement. Although it is likely that during the enforcement status changes many violations were intentionally committed by those aware of the rules and regulations of the area, public confusion added to the difficulty of enforcing on-leash dog walking rules.

ISSUES AND IMPACT TOPICS DISMISSED FROM ANALYSIS

ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL

The CEQ requires that environmental documents consider energy requirements and the conservation potential of various alternatives and mitigation measures. Dog walkers using GGNRA arrive at park sites on foot or by private automobile. However, vehicle miles traveled because of recreational dog walking in GGNRA are negligible in the context of regional travel because the alternatives would result in negligible to minor changes in private vehicle trips to GGNRA sites considered in the alternatives. Any change in energy requirements as a consequence of modifications in the number of vehicle trips to GGNRA resulting from the implementation of any of the alternatives would be imperceptible. As a result, this topic has been dismissed under all alternatives.

NATURAL OR DEPLETABLE RESOURCE REQUIREMENTS AND CONSERVATION POTENTIAL

Consideration of this topic is required by 40 CFR 1502.16. The NPS has adopted the concept of sustainable design as a guiding principle of facility planning and development (NPS 2006a, 124). Essentially, "sustainability" is the concept of living within the environment with the least impact on the environment. The objectives of sustainability are to design facilities to minimize adverse effects on natural and cultural values; to reflect the environmental setting and to maintain facilities to promote their resilience; and to illustrate and promote conservation principles and practices through sustainable design and ecologically sensitive use.

No facility planning or development is proposed in the alternatives considered in this final plan/EIS, although trail work and limited fencing is proposed. The alternatives would not result in an appreciable loss of natural or depletable resources. As a result, this topic was dismissed from further analysis in this document.

URBAN QUALITY AND DESIGN OF THE BUILT ENVIRONMENT

Consideration of this topic is required by 40 CFR 1502.16. The quality of urban areas, while an important consideration for GGNRA as noted above in the section "Needs of Urban Area Residents," is more properly addressed in the topic of visitor use and experience, which considers the overall experience of visitors and evaluates how the alternatives would affect visitors and the experiences they have at GGNRA. The analysis evaluates impacts for different groups of visitors, in recognition of the fact that different visitors enjoy different experiences. The evaluation of visitor experience includes the importance of the GGNRA areas to urban residents, recognizing the limited areas available. In addition, the analysis of impacts to adjacent areas outside of GGNRA from visitors walking dogs further considers this topic. Therefore, although this final plan/EIS does not evaluate the quality of the urban area as an independent topic, it is evaluated as part of visitor use and experience analysis.

FLOODPLAINS

NPS *Procedural Manual 77-2: Floodplain Management* (NPS 2003a, 1) provides agency-specific guidance for implementing Executive Order 11988, Floodplain Management. According to the guideline, an action class and applicable regulatory floodplain must be identified for a proposed action that is either subject to possible harm from flooding or has the potential for adverse floodplain impacts. Dog management actions are not expected to affect GGNRA floodplains, and possible flood events are not expected to affect dog management actions. As a result, this topic has been dismissed from further analysis.

PRIME AND UNIQUE AGRICULTURAL LANDS

In August 1980 the CEQ directed that federal agencies assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service as prime or unique. None of the soils at the GGNRA sites considered in the alternatives would qualify as prime or unique farmlands because they have not been used for production of crops during the past four years. Therefore, this topic has been dismissed from further analysis.

WILD AND SCENIC RIVERS

The *Wild and Scenic Rivers Act of 1968* established the national wild and scenic river system to protect the nation's highest quality natural rivers. There are no designated wild and scenic rivers within the study area, so this topic has been dismissed from further analysis.

INDIAN TRUST RESOURCES AND SACRED SITES

Indian trust assets are owned by Native Americans but held in trust by the United States. The U.S. Department of the Interior requires that any anticipated impacts to Indian trust resources due to a proposed project or action by Interior agencies be explicitly addressed in environmental documents (USDOI 1995, 512 DM 2). Since the lands within the park boundaries are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians, this topic was dismissed.

SOCIOECONOMICS

GGNRA park operations and visitors create social and economic links between the park and the surrounding community. However, dog management policies are not expected to have a noticeable impact on the economic links between GGNRA and the city of San Francisco. As a result, potential impacts on social and economic conditions would be highly unlikely to exceed a "negligible" threshold, and are therefore eliminated from detailed consideration.

Sufficient background information and description of the affected environment to support the preceding conclusion is presented below.

GGNRA has socioeconomic links with the community, including employment, income, taxes, and infrastructure. The socioeconomic environment affected by GGNRA dog policy includes the San Francisco metropolitan statistical area, comprising the counties of San Francisco, San Mateo, and Marin, each of which encompasses GGNRA lands. The gross domestic product for the San Francisco metropolitan statistical area was approximately $268 billion in 2005 and total employment was approximately 2.7 million.

The GGNRA boundary encompasses approximately 80,500 acres of land in San Francisco, Marin, and San Mateo counties, or nearly 12 percent of the total three-county land area. Currently, the park employs 346 staff members (250 permanent positions, 52 term positions, and 44 temporary positions). In 2008, a total of approximately 14.5 million people made recreational visits to GGNRA.

According to an economic impact model developed for the NPS, in 2006 local day-use visitors to GGNRA spent approximately $135.3 million out of an estimated total of $231.7 million spent by all GGNRA visitors (Stynes 2007, 21). The spending numbers were generated using generic expenditure profiles developed for national parks. Based on data from a variety of surveys, local day-use visitors are assumed to spend on average $38.70 per party per day. Visitation data on local visitors walking their dogs off leash in the park are not available; however, reports from park staff suggest that use of GGNRA by dog walkers has been increasing as regulations limiting or prohibiting off-leash dogs in areas managed by other agencies have been increasingly enforced. At the same time, the city of San Francisco has increased dog play areas in recent years.

The alternatives could affect visitation patterns of both dog owners, most of whom are likely local residents, and other local and nonlocal visitors in units of the park where dogs are permitted. Alternatives regarding the management of dog walking in the park could affect the socioeconomic environment through changes in spending by visitors at area businesses, which could also cause changes in employment and tax revenue. Restrictions on dog walking might reduce visitation by parties including dog owners and dog walkers. It is possible that visitation by individuals who prefer not to recreate near off-leash dogs (or dogs being walked on leash) might increase overall, or visitors might redistribute their visits across different park units, depending on the outcome of the final plan/EIS. There is a broad business community linked to the GGNRA that serves both local and out-of-town visitors. NPS does not know which specific businesses would be most affected by changes in spending by dog owners and dog walkers; however, because dog owners and dog walkers are likely to be local residents, businesses that cater primarily to tourists are less likely to be affected.

Some commercial dog walking businesses visit GGNRA to exercise dogs under their care. These businesses would be directly impacted by changes in park policy that would restrict or prohibit use of the park by commercial dog walkers. Research and interviews indicate that there are at least 100 commercial dog walkers in the city, although there are also commercial dog walkers who do not have a business license and are not listed in the phone book. Many of these dog walkers are single individuals (who may

or may not be licensed), as well as companies with several employees. There is at least one association for commercial dog walkers in San Francisco (Prodog). There are 68 registered businesses in the city of San Francisco providing pet care services and 216 such businesses in the San Francisco metropolitan statistical area (Reference USA 2005, 1). The park does not maintain official statistics on use of the park by dog walking businesses. According to interviews with stakeholders, most of the commercial dog walkers who use GGNRA visit at least once a week and others visit every day. In particular, commercial dog walkers use the Fort Funston area, the Crissy Field area, and Alta Trail above Marin City. Commercial dog walkers typically bring between four and ten dogs at a time to GGNRA and spend about one hour, twice a day, in the park. According to interviews, some dog owners request off-leash time for their dogs, and some dog walkers feel it is important to offer this service.

If commercial dog walking is not permitted in the park, commercial dog walkers may incur higher costs if they have to transport their dogs farther to find areas to walk their dogs, or if they have to reduce the number of dogs they walk at one time because of restrictive regulations in city dog parks or other public lands. While this would cause an impact on commercial dog walkers, the effects will be negligible within the context of employment within the San Francisco metropolitan statistical area (affecting less than 1/100 percent of the over 2.5 million jobs in the San Francisco metropolitan statistical area in 2005).

Based on the information summarized above, the NPS dismissed socioeconomics as an impact topic because implementation of alternative dog management policies is expected to have no measurable socioeconomic impact on the surrounding area. Estimated total spending by all local visitors to GGNRA accounts for 0.0008 percent of the total gross domestic product for the San Francisco metropolitan statistical area in 2005. Current spending by dog owners and dog walkers will be an even smaller fraction of the local gross domestic product. Changes in spending under alternative dog management proposals will have no impact or a negligible impact on the socioeconomic environment defined as employment, income, taxes, and infrastructure. In addition, spending by local residents does not have the same multiplier effect on the local economy as spending by nonlocal visitors. Local residents usually shift spending from one set of area businesses to another, leaving metropolitan statistical area-wide spending unchanged.

A separate cost-benefit analysis and regulatory impact analysis, as required under the *Regulatory Flexibility Act of 1980*, as amended in 1996, was conducted during the rulemaking process. This analysis concluded that the costs of the proposed rule are expected to range from $1.5 million to $3.8 million annually. Individually, impacts to commercial dog walkers are conservatively anticipated to range from approximately $366 per dog walker (128 dog walkers, costs of permits only) to $77,200 (affecting only one dog walker walking 14 or more dogs at one time, assuming no price increases). Overall, the cost-benefit analysis concluded that the proposed rule is not a major rule in terms of economic costs (Industrial Economics 2016, 2).

ISSUES AND IMPACT TOPICS ELIMINATED FROM FURTHER CONSIDERATION IN THIS FINAL PLAN/EIS

The following resources were analyzed in detail in the draft plan/EIS. The analysis determined that the impacts on the resource are thoroughly analyzed and described under another resource topic, and/or peer-reviewed literature or data does not exist to establish a direct impact from dogs on the resource. The following resources were dismissed from further analysis in this final plan/EIS.

SOILS

NPS *Management Policies 2006* requires the NPS "to understand and preserve the soil resources of parks, and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil or its contamination of other resources.…Management action will be taken by superintendents to prevent or at least minimize adverse, potentially irreversible impacts on soil" (NPS 2006a, Section 4.8.2.4, 56).

A detailed literature review was conducted to determine the associations between dogs, soils, and vegetation. Our literature review found very few investigations, and no peer-reviewed, scientific studies, that document the isolated effects dogs have on soils in recreational settings. Similarly, no site-specific, peer-reviewed studies have been conducted that document impacts to soils from dogs at the GGNRA sites. The results of the literature review provide a general nexus for dog-related impacts to vegetation, but do not isolate specific impacts to soils as a result of dogs. A study of the literature indicates that the primary detrimental soil impacts from general recreation are loss of productivity, erosion, compaction, rutting, and displacement (Douglass et al. 1999, 9.5), but this study did not specifically discuss recreation in the form of dog walking. However, there are some known and generally accepted impacts to soils from dog waste, but these studies are generally not peer-reviewed. Dog waste contains nutrients and can increase the amount of nitrogen and phosphorus in the soil (CRCCD 2009, 1). Some soils in the park are particularly unique or are by nature low in nutrients and a change in soil chemistry could potentially cause a change in vegetation, and can ultimately affect wildlife habitat, and wildlife species. These impacts are discussed in detail in the vegetation and wildlife sections of this final plan/EIS. Due to lack of peer-reviewed, scientific studies regarding isolated impacts to soils as a result of dogs, soils have been dismissed as a stand-alone resource topic in this document. Although the soil resources topic is not carried forward, impacts to soils are integrated into the vegetation section of the final plan/EIS, since peer-reviewed literature is available on this topic.

WATER QUALITY

Water resources at GGNRA include NPS administered coastal waters, brackish lagoons, streams, ponds, seeps, springs, and wetlands. Significant watersheds located completely or partially within the park (from north to south) include Bolinas Lagoon, Redwood Creek, Coyote Creek, Nyhan Creek, Tennessee Valley (Elk Creek), Rodeo Creek/Lagoon, Lobos Creek, Calera Creek and Laguna Salada, San Pedro Creek, Milagra Creek, San Mateo Creek, West Union Creek, Martini Creek, Montara Creek, San Vincente Creek, Denniston Creek, and the San Francisco watershed lands in San Mateo County. Smaller watersheds drain steep coastal bluffs directly into San Francisco Bay or the Pacific Ocean. Current management actions to improve water quality in GGNRA include water quality monitoring, watershed planning and restoration, habitat restoration and revegetation, drainage improvements, trail realignments, contaminant source identification and remediation, and site planning and design to reduce erosion (Stafford and Horne 2004, 5). Most water quality sampling to date has focused on specific sites with known or suspected water quality impacts, including beach water quality monitoring. Water quality monitoring has been conducted in several of the park's water bodies over the years, including areas covered under this plan: Redwood Creek, Rodeo Creek, Rodeo Lagoon, Oakwood Valley, Tennessee Valley, Easkoot Creek, Crissy Marsh, and Lobos Creek. Water quality indicators measured included flow, temperature, pH, specific conductance, turbidity, total suspended solids, dissolved oxygen, biochemical oxygen demand, nitrogen, phosphorus, ammonia, metals, and biological indicators such as fecal coliform (Stafford and Horne 2004, 5).

Dogs playing in streams, wetlands, lagoons, and coastal areas can increase turbidity by stirring up sediments into the water column. Also, dog waste can contribute to nutrient levels in streams, wetlands, lagoons, and coastal areas. As with terrestrial habitats, changes in nutrient levels in aquatic environments can alter the type and growth of vegetation and the ability of wildlife to continue to use the area.

Domestic dogs can also potentially introduce diseases (canine distemper, canine parvovirus, and rabies) and transport parasites into wildlife habitats (Sime 1999, 8.2). If pet waste is left on the ground, runoff from rain events may transport these microorganisms (including fecal coliforms) to adjacent water bodies, thereby affecting water quality. Wild birds, small mammals, and dogs can also introduce nutrients and microorganisms into water supplies, and these microorganisms, algal blooms, and other naturally occurring phenomena can make uninfected dogs sick when they drink from affected streams or ponds.

The literature review found very few investigations or peer-reviewed, scientific studies that document the isolated effects dogs have on water quality in recreational settings. The *Pillar Point Harbor Source Identification Project* report identified sources of fecal contamination within the Pillar Point Harbor. The harbor is located along the central California coast in San Mateo County and receives complex drainage inputs from freshwater creeks, storm drains, outflow pipes, and large, mixed-use areas including an airport, agricultural, commercial and residential areas (San Mateo County Resource Conservation District 2014, 4). Capistrano Beach is located within the harbor and was included in the study. The beach has three outfalls from creeks (Deer Creek, St. Augustine Creek, and Denniston Creek) whose headwaters are located within Rancho Corral de Tierra. Deer Creek is a small perennial creek whose headwaters flow through the eastern portion of Rancho near Deer Creek Trail before flowing through the rural valley and unincorporated community of El Granada. The headwaters of St. Augustine Creek flow near several trails in the middle of Rancho before going underground in the storm drainage system, and the headwaters of Denniston Creek flow near Farmer's Daughter Trail before flowing along the western border of El Granada.

Monitoring samples for fecal contamination were taken from these creeks at locations just upstream of El Granada as well as downstream of El Granada in the harbor at Capistrano Beach. Dog-associated *Bacteroidales* were frequently detected at outfall locations at Capistrano Beach (San Mateo County Resource Conservation District 2014, 6). The study found that the presence of a dog marker at Capistrano Beach was likely introduced from freshwater inflows. Upstream monitoring revealed that dog feces introduced into the waterway reaches the Capistrano Beach outfall and Deer Creek outlet after passing through the urban area located between the harbor and the upper watershed (San Mateo County Resource Conservation District 2014, 6). This was also found to be the case for Denniston Creek since the report suggested that additional fecal inputs were less likely added to Denniston Creek when the inflow passed through the suburban area before being discharged into the harbor (San Mateo County Resource Conservation District 2014, appendix A, 40). The study also concluded that "given the large area of wildlife habitat, it is plausible that various species of animals that reside along the waterway in the rural valley made a significant contribution to fecal pollution in Dennison Creek" (San Mateo County Resource Conservation District 2014, appendix A, 39).

Even though dog-associated *Bacteroidales* were frequently detected within creek locations downstream of Rancho the data do not support that the source of the *Bacteroidales* is associated with the upland GGNRA park area of Rancho.

There is concern about potential impacts of dog waste from a proposed VSCA on the Crissy Field airfield on the water quality in Crissy Marsh. This is because the eastern 1/3 to 1/2 of the airfield directly connects to the marsh through perforated underdrains that connect to the stormwater system, which ultimately drains into the marsh in this area. During rainy periods, especially large rainfall events, contaminated runoff from dog waste could drain into the marsh and negatively impact water quality. However, compliance with regulations to pick up dog waste and organized pet waste clean-up days for this area would minimize this threat to water quality. GGNRA continues to put concerted effort into maintaining water quality in Crissy Marsh, including evaluating the water used for irrigating the airfield, stormwater management with the Presidio Parkway project, and supporting restoration of the Tennessee Hollow watershed. The *Total Maximum Daily Load for Bacteria at San Francisco Bay Beaches* report

found that the waters at Crissy Field East Beach exceeded the total maximum daily load (TMDL) (California Regional Water Quality Control Board 2016, 50). A TMDL specifies the maximum amount of a pollutant that a water body can receive and still meet water quality standards. The fecal indicator bacteria (FIB) reported in the TMDL do not identify which specific source (e.g., humans, dogs, and wildlife) contributed to the FIB. FIBs are commonly used to assess microbial water quality for recreational uses. FIBs are intended to indicate the presence of fecal contamination, which is a potential human health risk for those who recreate in the water. FIBs include bacteria from animal and other wildlife, as well as human sources (California Regional Water Quality Control Board 2016, 12). Enterococcus bacteria exceedances were mainly found in November through March, which is the rainy season indicating a possible bacteria source at East Beach. Potential bacteria sources identified in the TMDL report are sanitary wastewater and urban runoff. A significant portion of the Presidio drains into Crissy Marsh, which itself drains to Crissy Field Beach and San Francisco Bay. The Presidio includes a mix of commercial uses and the Palace of Fine Arts area. Due to the age of the Presidio, leaky sewer infrastructure remains a likely source of FIB. In addition, infrastructure associated with the Palace of Fine Arts may be a source of bacteria (California Regional Water Quality Control Board 2016, 51). Monitoring of upland creeks within the Presidio revealed elevated densities of Enterococcus bacteria, although the report stated that data are limited. The California Regional Water Quality Control Board 2016 TMDL report does not consider boat wastes and wildlife to be significant sources of bacteria to the beach, but the report does point out that the east end of the beach is very popular with dog walkers year-round (California Regional Water Quality Control Board 2016, 53). Even though the waters at the east end of the Crissy Field Beach exceeded the FIB, there is no data to specifically implicate dogs (versus other known sources) in the water quality issues at East Beach.

The topic of water quality was originally included in the draft plan/EIS and was analyzed for all alternatives but was dismissed in the draft plan/SEIS. It was dismissed because even though water quality is currently monitored at GGNRA including FIB exceedances, no site-specific, peer-reviewed studies were conducted at GGNRA sites to document impacts to water quality specifically from dogs. It is also difficult to discern what is causing an impact to water quality, especially in a large metropolitan area where water quality may already be degraded. Although two peer-reviewed studies conducted in GGNRA were released recently as discussed above, these studies did not provide sufficient data to warrant including the topic of water quality in the analysis of this final plan/EIS. The data from the *Pillar Point Harbor Source Identification Project* do not support that the source of the dog-related bacteria detected in this study is associated with the GGNRA Rancho site, and even though the waters at the east end of the Crissy Field Beach exceeded the FIB there are no data to specifically implicate dogs in the water quality issues at East Beach. Furthermore, the preferred alternative would eliminate dog walking on East Beach. Therefore, water quality was dismissed as a resource topic in this document.

SUMMARY OF BACKGROUND CONDITIONS AND REVIEW OF LITERATURE

During the past seven years the park staff has amassed as much information as could be found on dog management–related topics. Topics for which information was collected include dog management policies from a variety of jurisdictions, shorebird data and information from scientists and organizations that monitor San Francisco Bay Area shorebird populations, and literature related to dog interactions with wildlife, diseases, and waste issues. Additional literature was evaluated for inclusion based on public comments on the draft plan/EIS.

DOG MANAGEMENT POLICIES FROM OTHER AGENCIES

Federal, state, regional, county, and local agencies and land trusts are the primary providers of publicly accessible shoreline open space in the San Francisco Bay Area. In recent years, the popularity of dog walking has challenged many agencies, municipalities, and nongovernmental organizations that own these lands. Dog ownership in urban areas presents a unique set of circumstances that have increased the demand for outdoor, "dog-friendly" places to exercise and socialize dogs. Increasingly, municipalities are providing dog parks or play areas where dog owners can allow their dogs to be off leash. Some parks and open space venues also may provide dedicated trails or portions of property for off-leash dog recreation and most have implemented regulations to reduce conflicts among various user groups and to protect sensitive natural and cultural resources as well as visitor experience and safety. To better understand the variety of circumstances dog management policies can address, NPS staff obtained dog management policies, information on visitor experience/conflict information, enforcement success, and other applicable information from a variety of NPS units and state, regional, county, and city park and recreation agencies. Information on dog management policies on lands adjacent to or near GGNRA sites was needed to clarify where other dog-related recreational opportunities were available in the vicinity of GGNRA and to assist with the development of alternatives that meet the goal of consistency with policies on adjacent lands. A summary of this information is stated below to provide an overview of dog management policies and the issues they raise.

OTHER NATIONAL PARK UNITS

Thirty-three NPS units located along waterfronts similar to that of GGNRA provided information on dog policies at their locations. Six Pacific Coast, 17 Atlantic Coast, three Gulf Coast, and seven Great Lakes units were surveyed. Twenty-two of these units allow on-leash dog walking with access restricted to designated areas of the sites. Seven units allow on-leash dog walking throughout the park sites; one with restrictions. No sites allow off-leash dog walking, per federal regulations, and two sites do not allow dogs at all.

Of the NPS sites that allowed on-leash dog walking, restrictions primarily limit on-leash dog walking to developed areas (campgrounds, parking lots, picnic areas, and trails); some units also restrict on-leash dog walking to designated trails. Eleven units incorporate seasonal restrictions for on-leash dog walking on beaches for the protection of species of special concern, such as elephant seals, snowy and piping plovers and other shorebirds, and sea turtles. Other beach access restrictions result from beaches being designated as swimming beaches.

As stated previously, the Presidio Trust, a federal agency established by Congress within the GGNRA boundary, is a cooperating agency for this final plan/EIS and manages lands located immediately adjacent to GGNRA-managed lands. Within Area B of the Presidio, the lands managed by the Presidio Trust, dogs must be on leash where allowed. In August 2014 the Presidio Trust released a final rule on public use limits on commercial dog walking. The rule imposes a public use limit on persons (commercial dog walkers) who are walking four or more dogs at one time in Area B of the Presidio. The limit requires commercial dog walkers in Area B to possess a valid commercial dog walking permit issued by the NPS and to comply with the terms and conditions of the NPS permit as well as those rules and regulations otherwise applicable to Area B. These actions are interim and will remain in effect until the final special regulation for dog walking in GGNRA is adopted.

OTHER SAN FRANCISCO BAY AREA AGENCIES

Dog management policies for jurisdictions in the San Francisco Bay Area—the California State Park System, Marin County (unincorporated Marin County, Marin County Open Space, Marin County Parks,

and Marin Municipal Water District), Midpeninsula Regional Open Space District, East Bay Regional Parks, the City/County of San Francisco, and San Mateo Parks and Recreation—are summarized in the paragraphs that follow.

California State Park System. There are six state parks in the immediate vicinity of GGNRA. In the counties which encompass GGNRA sites, 24 state parks (Angel Island, Mount Tamalpais, Samuel P. Taylor, and China Camp in Marin County; Candlestick Point in San Francisco; and 19 parks and beaches in San Mateo County) are available for recreation. Dog walking is permitted in most state parks and some beaches but dogs are either restricted to developed areas (e.g., picnic areas and campgrounds) or dogs must be in an enclosed vehicle, tent, or pen or be on a leash not more than six feet long. Unlike at GGNRA, even leashed dogs are generally not allowed on trails. For example, at Mount Tamalpais State Park, dogs are allowed on leash only in picnic areas and camping areas; no dogs are allowed on trails, fire roads, or undeveloped areas There is no limit to the number of dogs allowed per individual, but all dogs must be on a leash no longer than six feet. Compliance is generally not an issue (State of California 2007, 1). Visitors with vicious, dangerous, noisy, or disturbing animals are evicted from park units (State of California 2007, 1). On-leash dog walking is allowed on Surfer's Beach in Half Moon Bay and Montara State Beach (includes McNee Ranch).

Unincorporated Marin County. Dog access regulations require dogs to be under immediate control at all times but do not require them to be on a leash. Regulations require that dogs be kept from physically harassing other people and animals, and the maximum number of dogs is regulated at "three over the age of four months unless the walker is a 'hobbyist' or has a ranch dog permit." There is no waste regulation in the unincorporated areas. There may be water access (bays, ocean, lakes, and reservoirs) at some locations. Rules are enforced by the Marin County Humane Society.

Marin County Open Space. There are parks and beaches managed by Marin County located near GGNRA, including Blithedale Summit Open Space Preserve and Camino Alto Open Space Preserve. At parks managed by Marin County, dogs are generally restricted to 155.25 miles of trails and fire roads (appendix J). Dogs are allowed off leash only on 92.5 miles of fire roads (appendix J). Leashes must be a maximum of six feet in length and dogs not on leash must be under direct and immediate control. A maximum of three dogs per person is allowed based on the county code for pets per household/per family. Sensitive areas have additional restrictions for dog management. Commercial dog walkers must obtain an annual conditional use permit, which allows up to six dogs to be walked at one time and requires at least three of the six dogs to be on leash at all times. Dog waste must be picked up by the dog walkers. Rangers enforce restrictions, and the largest area of noncompliance is off-leash dogs in areas where they are not allowed (County of Marin 2006a, 6 and 2006b, 1). Marin County also manages Bolinas Beach and Upton Beach, where dogs are allowed on the beach. Although managed by the county, Bolinas Beach also includes some private lands and off-leash dog walking is allowed at this beach. Upton Beach requires dogs to be on leash, but off-leash dog walking, while not permitted, does occur here.

Marin County Parks. Approximately 900 acres including 12 miles of paved multi-use paths make up park areas in Marin County. Currently dogs are permitted on leash in all park areas and on the multi-use pathways. However, dogs are not permitted at McNears Beach, Paradise Beach, and Stafford Lake parks. Dogs are not allowed in sensitive resource areas, in play areas, in playgrounds, on play equipment, and on ball fields. McInnis Park and Upton Beach provide both on- and off-leash areas (appendix J). Leashes must be no longer than 6 feet and commercial dog walking is prohibited.

Marin Municipal Water District. This district owns about 21,000 acres of watersheds and reservoirs. Dog walking is allowed only on leash (six feet) on 130 miles of road and trails, unless posted for temporary closures for construction projects or to protect species of special concern (appendix J). There is

no limit to the number of dogs as long as all are on leash. Enforcement is highest for noncompliance with the on-leash requirement (Marin Municipal Water District 2002, 25-26).

Midpeninsula Regional Open Space. Midpeninsula Regional Open Space District is a regional greenbelt system that includes more than 60,000 acres of land in 25 preserves (appendix J). This district west of U.S. Highway 280 stretches from Los Altos in the south to San Carlos in the north. Dogs are allowed on all trails (57.1 miles, appendix J) in six of 25 preserves and on designated trails in four additional preserves. Dogs are permitted to be off leash only in the marked off-leash 17.5-acre area in the Pulgas Ridge Preserve (appendix J). Walkers may have a maximum of three dogs and a maximum leash length of six feet for traditional leashes and 25 feet for retractable leashes (Midpeninsula Regional Open Space District 2007, 1). Dog walkers must move dog waste well off the trail and out of sight, or preferably, bag and remove waste from the preserves. There are no special regulations for commercial dog walking enterprises. Major enforcement problems arise from off-leash dogs in restricted areas (Midpeninsula Regional Open Space District 2004, 1 and 2007, 1).

East Bay Regional Parks. Dog walking is allowed on leash in parking lots, picnic sites, lawns, or developed areas, but dogs are prohibited at swimming beaches, pools, golf courses, wetlands, designated nature study areas, and areas with sensitive habitat or endangered or threatened species. A maximum of three dogs per person is allowed and leashes must be no longer than six feet. Dogs are allowed on leash in most undeveloped areas (102,797 acres, 1,133 miles of trails, appendix J) except where restricted for resource and wildlife protection. Dogs are also allowed off leash at one developed site (23 acres, 2.5 miles of trail, appendix J), Point Isabel Regional Shoreline, which is a state park area managed by East Bay Regional Park District and one of the most heavily used dog parks in the country. Commercial dog walkers and private individuals intending to walk more than three dogs are allowed to walk one to six dogs with an annual permit. All other restrictions for dog walkers apply to commercial dog walkers as well. Walkers are required to remove dog waste. The East Bay Regional Park system does not have any major compliance issues (East Bay Regional Parks 2006, 1, 4).

San Francisco Public Utilities Commission. The lands managed by the San Francisco Public Utilities Commission in San Mateo County are referred to as Peninsula Watershed lands. These lands serve as a state fish and game refuge and are designated by the California Department of Forestry as a hazardous fire area. On these lands, the NPS holds a scenic easement (approximately 19,000 acres) and a scenic and recreation easement (approximately 4,000 acres), which were established through an agreement with the U.S. Department of the Interior, Caltrans, and San Mateo County. Recreation activities such as hiking, biking, walking, and running are permitted only in the scenic/recreation easement. Dogs and other pets are not allowed on the watershed lands with the exception of guide, search and rescue, and police dogs.

City/County of San Francisco. San Francisco Recreation and Park Department has 227 properties and 3,400 acres under its management (SFRPD 2007, 1, appendix J). Outside of the 28 designated off-leash areas (120 acres including trails, appendix J) in San Francisco city parks, dogs are required to be on leashes no longer than six feet. Up to three dogs per owner are allowed and dog walkers must pick up dog waste. The San Francisco Recreation and Park Department's dog policy excludes dogs (on- and off-leash) from sensitive habitat areas, such as sensitive wildlife areas (e.g., breeding habitat for birds), sensitive remnant native plant communities (e.g., wetlands), sensitive plant populations (e.g., locally rare wildflower species), and high erosion prone areas. Dogs are also excluded temporarily from restoration areas (SFPD 2011, 156). Dogs are allowed off leash in 32 designated dog play areas (DPAs) within 24 city parks. Some of the DPAs are fenced and others use natural barriers such as topography or shrubbery; all DPAs have a minimum area of 10,000 square feet and any sensitive habitat or resource sections where dogs are prohibited have been fenced off or posted. In 2012, the San Francisco Board of Supervisors passed an ordinance that, starting in 2013, will require commercial dog walkers to obtain a permit to walk

four or more dogs, with a limit of eight, on City of San Francisco park property (including some lands managed by the Port of San Francisco and by the San Francisco Public Utilities Commission).

San Mateo County. In San Mateo manages 17,000 acres and 190 miles of trail. Dogs are not allowed in any county park by county ordinance; however, 5.6 miles of trails are unofficially used for on-leash dog walking and are described for on-leash dog use on the county website (appendix J). The San Mateo County Parks Department is initiating a comprehensive dog management strategy for county parks that will determine where people can use the parks and trails for dog walking (appendix J). This will result in changes to county policies, ordinances, and practices.

City of Pacifica. Pacifica is the closest city to NPS lands within San Mateo County. There is one park managed by the City of Pacifica, known as Pacifica State Beach (at Linda Mar), that allows dogs on leash on the beach, and there are two off-leash areas, Esplanade Beach and the newly opened Sanchez Dog Park.

OTHER MUNICIPALITIES

City of Santa Cruz, California. Dogs are allowed to run off leash in designated areas of seven parks, with time restrictions, and are not permitted in six parks. Walkers are required to remove dog waste (City of Santa Cruz 2009, 1).

City of Boulder, Colorado. City of Boulder Parks and Recreation District allows on-leash dog walking in all urban parks. Four urban parks also have dog parks where off-leash dog walking is allowed. A separate city department, Open Space and Mountain Parks, has 144 miles of trails, 94 percent of which are open to dogs with the exception of seasonal trail closures and leash restrictions for resource protection. Some of these trails require all dogs to be on leash, but others allow dogs off leash if they meet voice-and-sight-control standards. Those standards are from the Open Space and Mountain Parks-developed Voice-and-Sight Tag Program, an education and certification program required of all dog "guardians" wishing to walk their dogs off leash on Open Space and Mountain Parks trails that allow voice and sight control. Upon completion of the course, high-visibility tags can be purchased for any dogs that the guardian has agreed can adhere to the voice-and-sight-control guidelines. Open Space and Mountain Parks has also instituted a "Trailhead Area Leash Program" to reduce incidents at trailheads where there has been a high level of conflict between dog walkers and visitors without dogs (City of Boulder 2009, 1).

Nashville, Tennessee. All Nashville Metro parks are open to dogs on leash, and there are three dog parks that provide fenced areas for off-leash dogs. Dogs are not allowed in playgrounds or pool facilities. Owners/walkers must remove waste and keep dogs under control (City of Nashville and Davidson County 2005, 3-10). Prior to the establishment of the dog parks, Metro Park Police and other staff report that unrestrained dogs became one of the most frequent sources of complaints on park property (City of Nashville and Davidson County 2005, 3-10).

Seattle, Washington. Dogs are allowed to roam off leash at 11 of the 400 parks and recreation areas in the Seattle metro area. Although dogs are allowed on leash in most other park areas, they are not allowed on beaches, play areas, or organized athletic fields. Owners are responsible for waste removal. Fines are implemented for leash and waste-removal violations (Seattle Parks and Recreation 2009, 1, 3).

British Columbia, Canada. After the City of Surrey conducted an extensive literature review of impacts of dogs on the foreshore and nearshore at Blackie Spit Park, they concluded that the park would not be a good candidate for dog access to the intertidal zone due to highly sensitive and regionally important habitats located within the park, as well as the relatively small size of the less sensitive habitats. The City

also decided that extensive fencing to prevent off-leash dogs from accessing other areas of the park and well-spaced signs that clearly indicated dog management regulations should be used. It was also concluded that the City of Surrey, the local dog owners' group, and naturalists' organizations should implement a dog park outside the park in an area that does not have high environmental value (Andrusiak 2003, 35).

DOGS AND NATURAL RESOURCES

This section provides a general summary of the literature review conducted to determine the potential for adverse impacts from dogs or dog use on wildlife and wildlife diseases, and vegetation (including soils). Impact topics are discussed in more detail and used for the purposes of the impacts analysis presented in chapter 4.

Dogs and Wildlife. Numerous studies have documented disturbance to wildlife species as a result of domestic dogs in recreational/park settings (Burger et al. 2004, 287; Davidson and Rothwell 1993, 101; George and Crooks 2006, 14; Kirby et al. 1993, 55; Lafferty et al. 2006, 2222; Lenth et al. 2008, 223; Miller et al. 2001, 131; Smit and Visser 1993, 10; Thomas et al. 2003, 69; Yalden and Yalden 1990, 249). In recreational/park settings, domestic dogs and people are generally not mutually exclusive, and it is therefore difficult to isolate the impacts and effects of dogs alone on wildlife. However, visitors with dogs could impact natural resources such as wildlife to a greater extent than visitors without dogs. Studies have shown that people with dogs disturb wildlife more than people alone (Yalden and Yalden 1990, 248-249), and that dogs may pose a different kind of threat compared to a pedestrian (Miller et al. 2001, 130). Studies have also suggested that dogs, particularly while off leash, increase the radius of human recreational influence or disturbance beyond what it would be in the absence of a dog (Banks and Bryant 2007, 2; Sime 1999, 8.4; Miller et al. 2001, 125; Lafferty 2001a, 318). For example, golden plovers (Yalden and Yalden 1990), marmots (Mainini et al. 1993, 162), mule deer (Miller et al. 2001, 131), squirrels, and rabbits (Lenth et al. 2008, 218) exhibited a greater response to or reduced levels of activity when human hikers were accompanied by a dog compared to solitary hikers. "Authors of many wildlife disturbance studies concluded that dogs with people, dogs on leash, or loose dogs all provoked the most pronounced disturbance reactions from their study animals" (Sime 1999, 8.2). Animals most often affected by disturbance from dogs include deer, small mammals, and birds (Sime 1999), although canids and other larger mammals such as bobcats can also be affected by disturbance (George and Crooks 2006, 14-15).

The majority of domestic dogs in the U.S. are pets that have their food requirements met at home, thus allowing them ample energy to interact with wildlife (Lenth et al. 2008, 218). Domestic dogs behave as carnivores and at some level still maintain instincts to hunt and/or chase (Sime 1999, 8.2) and are capable of catching and killing prey species (Lenth et al. 2008, 218). Dogs may disturb wildlife either accidentally or deliberately through chase (Andrusiak 2003). Even if the chase instinct is not triggered, dog presence in and of itself may be an agent of disturbance or stress to wildlife (Sime 1999, 8.3; Lenth et al. 2008, 218). If dogs chase or pursue wildlife, injuries to wildlife could be sustained directly or indirectly as a result of accidents that occur during the chase rather than direct contact with the dog (Sime 1999, 8.4). Dogs on leash disturb wildlife less frequently than dogs off leash, but actual direct injury or mortality to wildlife by dogs in either situation is rare (Andrusiak 2003). Dog presence has been correlated with altered patterns of habitat use for wildlife species (Lenth et al. 2008, 222). The modification of normal behaviors such as feeding, nesting, grooming, and resting can occur through repeated disturbance and wildlife may relocate from preferred habitat to other areas to avoid harassment, including the displacement of wildlife from public to private lands (Sime 1999, 8.4). However, disturbance avoidance may not accurately reflect species sensitivity to disturbance. Other factors such as availability of suitable habitat also should be weighed (Gill et al. 2001). Although disturbances are generally non-lethal and

temporary, the cumulative effects of disturbance may be significant, particularly to sensitive species (Lafferty et al. 2006, 2217).

Generally, birds are more sensitive to the approach of dogs than to the approach of human beings (Andrusiak 2003, ES) and the "presence of dogs may intensify bird responses to pedestrians" (Sime 1999, 8.10). Shorebirds nesting on beaches are presumed to be the species most sensitive to disturbance and several species, particularly coastal plovers in the genus *Charadrius*, are endangered or threatened (Lafferty 2001b, 315) and are very likely to leave an area altogether if disturbed (Kirby et al. 1993, 56-57). At GGNRA, high levels of pedestrian and dog use of park beaches located along the Pacific Flyway can lead to reduced habitat quality for shorebirds "because disturbance may reduce foraging efficiency and opportunities for rest" (Lafferty 2001a, p. 1949). In Southern California, dogs disturbed shorebirds disproportionate to their numbers because some dogs chase shorebirds, and due to the possibility that snowy plovers are more sensitive to dogs than people (Lafferty 2001a, Lafferty 2001b). Although leashing makes it difficult for pets to chase birds and reduces the probability of disturbance and the number of birds impacted per disturbance, leashed pets still disturb birds (Lafferty 2001a, 1955). "Dogs can disrupt habitat use, cause displacement responses, and injure or kill birds" (Sime 1999, 8.10). Dogs that are off leash in natural areas during the breeding season can result in a higher level of disturbance to wildlife, including ground-nesting or colonially nesting birds (Andrusiak 2003, 20; Sime 1999, 8.4, 8.9). Birds may not habituate to dog disturbance (Banks and Bryant 2007, 2) because it is unpredictable and represents an actual physical threat (Andrusiak 2003, 3.2).

Dogs and Diseases Related to Wildlife. The role of dogs in wildlife diseases is poorly understood (Sime 1999, 8.4). Most dog owners responsibly vaccinate their pets for diseases such as canine distemper, canine parvovirus, and rabies. Domestic dogs that are not vaccinated can potentially introduce diseases into wildlife habitats (Sime 1999, 8.2). Viruses related to canine distemper virus have been documented in the deaths of a wide variety of wild animals, from seals, dolphins, and porpoises in Russia to lions in Africa, but there are fewer documented instances of deaths caused by canine distemper in areas where domestic animals are regularly vaccinated (Mills 1999, 2-8). Domestic dogs may also host both endoparasites and ectoparasites, and it is possible for dogs to contract diseases from or transmit diseases to wild animals (Sime 1999, 8.4). Dog feces have been implicated in the transmission of muscle cysts (*Sarcocystis* spp.), which can infect a variety of ungulate species, including mule deer and white-tailed deer. Dogs may also introduce diseases or parasites to small mammals. Additionally, in an area of GGNRA, Riley et al. (2004, 11) showed that proximity to urban areas or contact with humans can increase the risk of wild carnivore populations' exposure to disease, including canine parvovirus in foxes and feline calicivirus in bobcats.

Dogs and Vegetation. It has been documented that recreational activities can affect vegetation and soils, resulting in damage to plant communities (Cole 1978, 281; Douglass et al. 1999, 9.2). Sensitive environments can be subject to physical disturbance by dogs (through digging) and could damage vegetation and soils, with resulting influences on vegetation, soils, and wildlife such as small mammal populations (Sime 1999, 8.9). "High foot traffic (both people and dogs) resulting from an off-leash area would result in trampling and disturbance of vegetation" (Andrusiak 2003, 5). In addition, heavy off-leash dog use increases deterioration of native dune communities (Shulzitski and Russell 2004, 5). Dogs (as well as horses and hikers) may also alter dispersal of both native and non-native plants along trail corridors, as seeds that adhere to their paws and fur are then transported to other locations, possibly resulting in the spread and establishment of new populations of invasive and/or non-native plants (Sime 1999, 8.9-8.10). Dog waste contains nutrients and can increase the amount of nitrogen and phosphorus in the soil (CRCCD 2009, 1). Although nitrogen and phosphorus are nutrients required for plant growth, dog waste could increase the amount of nutrients in the soil above natural levels; dog urine could increase the natural salinity of soil. An increase in nutrients from dog excrement in concentrated areas could result in adverse impacts to native plants and soil organisms.

HEALTH AND SAFETY

This section provides a general summary of the literature review conducted to determine the associations between dogs and diseases, encounters with unruly/aggressive dogs, and the safety of off-leash dogs, which is discussed in more detail and used for the purposes of the impacts analysis presented in chapter 4.

Dogs and Diseases Related to Humans. Pet waste can contain pathogens, such as *Giardia,* roundworms, *Salmonella*, *Escherichia* (particular strains of some species are human pathogens, such as fecal coliform bacteria), parvovirus, and many other microorganisms that can be harmful to human health (CRCCD 2009, 1). Leaving pet waste anywhere on the ground may expose children, adults, and other pets to these potential pathogens and bacteria (CRCCD 2009, 1). If dog waste from infected dogs is left on the ground, the surrounding soil can become contaminated with parasite eggs that are passed in animal feces and hatch in the soil. The collection of feces and reducing feral and unaccompanied domestic animals in parks could help reduce the risk of transmission of many diseases (Riley et al. 2004, 19).

There is also a risk of humans getting sick from drinking or swimming in waters contaminated by pet waste (CRCCD 2009, 1). If pet waste is left on the ground, runoff from rain events may transport microorganisms to adjacent water bodies. Fecal coliform bacteria are routinely measured at bathing beaches as an indicator of potential contamination from human or animal waste, although once contamination is detected, other tests are needed to determine the specific source. Wild birds, small mammals, and dogs can also introduce microorganisms into a water supply, and these microorganisms, algal blooms, and other naturally occurring phenomena can make uninfected dogs sick when they drink from affected streams or ponds.

Encounters with Unruly/Aggressive Dogs. Encounters with unruly or aggressive dogs can pose a major health and safety concern to people and other pets. Serious bites can result in injury/disease, medical insurance and worker's compensation claims, lost wages, and sick leave (AVMA Task Force 2001, 1732-1749). At GGNRA, reported incidents of encounters with unruly/aggressive dogs include instances of visitors being knocked down, intimidated, and bitten by dogs. From 2008 through 2011, a total of 95 violations were given for dog bites or attacks at the GGNRA park sites as recorded by GGNRA law enforcement staff (appendix G). Data collected by the Centers for Disease Control and Prevention show that approximately 4.5 million Americans are bitten by dogs each year, and one in five dog bites results in injuries that require medical attention (Centers for Disease Control and Prevention 2009). Small children are typically the most common victims of dog-related injuries because of their natural behaviors, such as running, yelling, grabbing, or hitting, which may sometimes threaten a dog. Children are also more likely than adults to receive medical attention (Centers for Disease Control and Prevention 2009). Elderly people are also considered at a higher risk of complications from dog-related injuries due to their increased susceptibility to bruising and lacerations. Additionally, elderly people may have decreased sensory perception, which could result in them not seeing or hearing a dog or could make them unable to escape from an aggressive dog (AVMA Task Force 2001, 1742).

Guide Dogs. Off-leash dogs can interfere with guide teams (a person and their guide dog), often by attacking the guide dogs, threatening the physical and emotional well-being of guide dog teams. Even without physical injury, attacks and interface can negatively affect a guide dog's behavior and work performance. Following an attack, guide dogs may be unable to work because of physical injuries, and they may develop undesirable behaviors towards other dogs (Kutsch 2011, 6). Guide dog teams are more vulnerable in areas under voice and sight control, due to off-leash dogs. Service animals accompanying a person with a disability, as defined by Federal law and Department of Justice regulations (28 CFR 36.104), are allowed wherever visitors or employees are allowed.

Exercise. Visitors with dogs, including elderly and handicapped visitors may experience beneficial effects of walking their dogs. Dog walking provides mental health benefits by providing a social community for many people. Studies have shown that dog owners exercise more than people who do not own dogs. A study in Australia looked at how dog ownership influenced physical activity (Cutt et al. 2008). Dog owners walked their dog on average 2.6 times per week. Frequency and duration of total walking, walking for recreation, walking in the neighborhood, and total physical activity were higher among dog owners than those that did not own dogs. The results confirm the potentially important role that dogs could play in increasing levels of physical activity among owners (Cutt et al. 2008). In a separate study, 61 percent of the 2,170 dog owners sampled walked their dog for at least 10 minutes at a time. The median number of times dog owners reported walking their dog each week was three and the median duration was 25 minutes. The median weekly duration of dog walking was high among young dog owners, declined in middle age, and increased in persons aged 65 years and older. Dog walking contributed to a significant increase in the total amount of walking conducted per week (Reeves et al. 2011). In addition to providing physical health benefits, dog companionship has been linked to better physiological, social, and mental health.

DOGS AND VISITOR EXPERIENCE

The presence of dogs, whether on or off leash in parks, may affect visitor experience. Some visitors enjoy the sight of dogs in the park, and enjoy the ability to interact with other people's dogs. For others, dogs off leash create fear, and some people just prefer to avoid encounters with dogs (Roberts 2007, iii). Dog walkers can indirectly affect the aesthetics of the park, as well as affecting visitor experience through reduced enjoyment, when they do not pick up their dogs' waste on trails, beaches, or in picnic areas (Roberts 2007, iii). Also, dog walking results in the smell of dog urine, which can be an especially displeasing experience on a hot summer day. Park visitors with dogs typically use GGNRA for dog walking because of leash laws in the surrounding areas, where off-leash dog walking is prohibited or limited, and because they prefer to visit areas with access to beaches, shoreline, and greater exercise opportunities for their dogs.

As stated previously and in response to the ANPR in January 2002, a public comment analysis report was published (NAU 2002a, 1). In this report, 71 percent of public comments favored allowing off-leash dog walking in selected GGNRA sites (option B) and 28 percent of public comments favored the enforcement of existing leash laws in the GGNRA (option A) (NAU 2002a, 5). More than 500 respondents affirmed their belief that it is their right to walk dogs off leash at park sites. Other reasons given in support of off-leash dog walking concerned the benefits to humans, including increased sociability with other dog walkers or with visitors who enjoyed interacting with dogs, and the safer feeling some dog owners have when they visit urban parks, especially at night, if their dogs are present (NAU 2002a, 17-20). However, approximately 13 percent of the comments received cited feelings of discomfort around or fear of off-leash dogs and felt that off-leash dogs were dangerous to children; a similar percentage also stated that dogs in general make the park unsafe for visitors (NAU 2002a, 10).

In addition to the ANPR public comment analysis report, a telephone survey regarding NPS pet management regulations was also conducted, which was discussed in more detail previously (NAU 2002b, 1). The results of the telephone survey showed that 71 percent of all respondents supported and 23 percent opposed the current NPS regulation for walking dogs on leash at most GGNRA sites and prohibiting off-leash dog walking (NAU 2002b, 11). When asked whether they specifically supported allowing off-leash dog walking in GGNRA, 40 percent of all respondents stated that they supported allowing dogs off leash in GGNRA and 53 percent stated that they opposed allowing off-leash dog walking in GGNRA sites (NAU 2002b, 11). A total of 28 percent of the respondents were dog owners or dog caregivers; of these respondents, 50 percent used GGNRA for dog walking purposes (NAU 2002b, 16). Almost one-third of visitors from each of four counties surveyed who had seen off-leash dogs while

visiting GGNRA sites viewed that experience positively, but the largest proportion of visitors from each county stated that off-leash dogs had neither a positive nor negative effect on their experience at GGNRA (NAU 2002b, 20). Some of the respondents stated that they enjoy playing with other visitors' dogs and that dogs at play add to the park's visual appeal (NAU 2002b, 19-20). Also during the 2002 telephone survey, a total of 22 percent of respondents who saw dogs off leash in GGNRA said that it detracted from their visitor experience; additional comments received during the survey found that visitors who are not familiar with dogs or who have had unpleasant experiences with dogs in the past are easily intimidated by dogs (NAU 2002b, 19-20).

To collect current and detailed information regarding visitor use of the park by dog owners, NPS conducted a survey in 2012 to measure customer satisfaction related to dog walking at GGNRA sites. This survey, *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a), evaluated the perception of and satisfaction with the current on and off-leash dog walking policies, and potential for redistribution of use based on access changes resulting from implementation of this final plan/EIS. Of the dog walkers that responded to the survey 36 percent of individuals indicated that they were "not satisfied" or "slightly satisfied" with on-leash dog walking opportunities at their most frequently visited sites at the park and 30 percent of individuals were "not satisfied" or "slightly satisfied" with off-leash dog walking opportunities their most frequently visited sites at the park (NPS 2012a, 11, 16). Details of this study are discussed in chapter 3 in the section "Visitor Use and Experience."

ENVIRONMENTAL JUSTICE

In a study conducted by San Francisco State University in 2007 on ethnic minority visitor use experience at GGNRA, research found that dogs were a problem mentioned by all Latino and Asian groups (Roberts 2007, iii). Research found that these minority groups mentioned dogs, especially dog waste, as a barrier to park visitation, and overall, Latinos were the most concerned with dog owners' lack of concern or control of their dogs (Roberts 2007, iii). However, in the telephone survey conducted by Arizona University's Social Research Laboratory, 39.4 percent of respondents of Hispanic origin supported (strongly and somewhat) off-leash dog walking and 39.9 percent of respondents of non-Hispanic origin supported (strongly and somewhat) off-leash dog walking (NAU 2002b, 93). Therefore, the Hispanic and non-Hispanic populations supported off-leash dog walking by almost the same percentages. The telephone survey also divided respondents by Asian-American, Black/African-American, and Caucasian races. Racial differences in opinion did not vary by many percentage points for support of off-leash dog walking. Approximately 44 percent of African-American respondents, 40 percent of Caucasians, and just over 37 percent of Asian-Americans supported (strongly and somewhat) off-leash dog walking in the telephone survey (NAU 2002b, 92-93). Only when the support category was further divided into "strongly support" and "somewhat support" could racial differences be seen. For example, only about 5 percent of African-American respondents strongly supported off-leash dog walking, whereas almost 17 percent of Caucasians and just over 20 percent of Asian-Americans strongly supported off-leash dog walking (NAU 2002b, 93).

A visitor survey documenting visitor experience for Crissy Field, Ocean Beach, and the Presidio (including some sites in Area B, which is outside of the analysis of this final plan/EIS) was conducted in the summer and fall of 2008. The first phase of the survey involved an intercept survey (personal contact with visitor) to provide a visitor population profile, including a more thorough understanding of who visits the parks, use patterns, visitors' likes and dislikes, and a preliminary understanding of their visitor experience (Tierney et al. 2009, 1). The second phase of the survey included a follow-up telephone survey with the same visitors interviewed in the first phase; the purpose was to gather more detailed information on visitor experiences, satisfaction, and opinions about park management (Nakagawa, Rodgers, and Adock et al. 2010, 8). In the first phase, respondents were asked questions about their background (ethnicity, language spoken at home, state of residence, income), as well as ease of access to the sites,

quality rating of the sites, reasons for visiting the park, likes or dislikes about the sites, and suggestions for improving the visitor experience. Both phases of the 2008 study found that frequency of suggestions about keeping dogs on leash and citing off-leash dogs was fairly consistent among Asian and White respondents. During the survey, visitors were asked if they had suggestions for improving the experience at the park. The survey allowed for open-ended answers. Of the respondents, 3.3 percent stated that dogs should be kept on leash, visitors should be cited for off-leash dogs, or that dogs should not be allowed at the park (Tierney et al. 2009, 69). White respondents suggested that dogs be kept on leash 3.4 percent of the time, and Asian respondents suggested this 3.2 percent of the time (Tierney et al. 2009, 75). This concern was not cited by Black/African American, Native Hawaiian, or American Indian respondents who were asked for suggestions on how to improve the park experience (Tierney et al. 2009, 75).

In the second phase of the survey (telephone survey), 16 percent of all respondents noted dogs off leash as a "moderate" or "serious" problem associated with the park experience. It was found that 20 percent of Hispanic respondents and 19 percent of Asian respondents cited dogs off leash as a moderate or serious problem at these sites (Crissy Field, Ocean Beach, and the Presidio Area B), while 14 percent of White respondents noted off-leash dog walking as a serious issue (Nakagawa, Rodgers, and Adock et al. 2010, 51). Alternately, 10 percent of the respondents in the follow-up survey listed dogs (dog owners, rules, or presence of dogs) as a reason to return to the park sites. The percentage of respondents who listed dogs as a reason for returning to the park sites (Crissy Field, Ocean Beach, and the Presidio Areas A and B) was similar among different racial and ethnic groups, with White respondents listing dogs 11 percent of the time, and Asian and Hispanic respondents 9 percent of the time (Nakagawa, Rodgers, Adock et al. 2010, 62). Similarly, 7 percent of all respondents mentioned dogs when they were asked to describe special park qualities. The percentage of respondents who mentioned dogs in response to this question varied slightly across racial and ethnic groups, with 8 percent of Whites, 9 percent of Hispanics, and 11 percent of Asians noting dogs (Nakagawa, Rodgers, Adock et al. 2010, 67).

SCOPING PROCESS AND PUBLIC PARTICIPATION

Scoping is an early and open process to determine the breadth of environmental issues and alternatives to be addressed in a planning document prepared in accordance with NEPA. Scoping includes obtaining early input about the planning project from the public, staff, interested agencies, or any agency with jurisdiction by law or expertise. Scoping activities for this project are summarized below. Additional information on the public involvement process and ongoing agency coordination is presented in "Chapter 5: Consultation and Coordination."

Scoping is an early and open process to determine the breadth of environmental issues and alternatives to be addressed in a planning document prepared in accordance with the NEPA.

PUBLIC INVOLVEMENT WITH THE NATIONAL ENVIRONMENTAL POLICY ACT PROCESS

Significant public involvement on dog walking in GGNRA has occurred since 2001, as described in previous sections, including the following:

- Public attendance and comments at the GGNRA Citizens' Advisory Commission meeting in January 2001, in which the voice control policy was acknowledged as contrary to 36 CFR 2.15(a)(2), prohibiting off-leash dogs in national parks.
- Public comments on the ANPR received within the 91-day comment period, January to April 2002.

- Public informational meetings on the ANPR in March 2002 and an oral comment session in April 2002.
- Phone survey by Northern Arizona University of 1,600 households in the four-county San Francisco Bay Area in spring 2002.
- Interviews with stakeholders conducted as part of the negotiated rulemaking assessment process in 2004.
- NOI to Establish the Negotiated Rulemaking Committee, published in the Federal Register on June 28, 2005, which invited the public to comment on the proposal to create the Committee.
- Notice of Establishment of the Negotiated Rulemaking Committee, published in the Federal Register on February 17, 2006.
- Dog Management Negotiated Rulemaking Advisory Committee Meetings in March 2006, April 2006, May 2006, July 2006, September 2006, April 2007, and October 2007.
- Dog management draft plan/EIS public scoping comment period and public meetings, February–April 2006.
- Release of the Dog Management draft plan/EIS in January 2011 with a public comment period open until May 2011.
- Four public open-house format meetings, during the public comment period for the draft plan/EIS, held in Marin, San Francisco, and San Mateo counties, March 2011.
- Numerous emails, phone calls, correspondence, and media stories regarding the issue.
- Release of the dog management draft plan/SEIS in September 2013 with a public comment period open until February 2014.
- Three public open house-format meetings, during the public comment period for the draft plan/SEIS were held in Marin, San Francisco, and San Mateo counties, November 2013.
- Published the Proposed Rule for Dog Management in GGNRA in the Federal Register on February 24, 2016, with a public comment period open until May 2016.
- Six public informational meetings, during the public comment period for the Proposed Rule for Dog Management in GGNRA, held in Marin, San Francisco, and San Mateo counties, March 2016.

GOALS OF THE PUBLIC INVOLVEMENT PROCESS

At the January 2005 internal scoping meeting, NPS staff discussed goals for future public involvement on this issue and the means and processes that might be used to involve the interested and affected public effectively. The following public involvement goals were derived from the January 2005 internal scoping meeting:

- Work toward community acceptance of the process and the solution.
- Allow the community to participate, maximizing creative thinking.
- Enhance public understanding of natural and cultural resource values.
- Enhance public understanding of the requirements of the ESA and other legal obligations.

- Provide notice that the park is moving forward, and that now, not later, is the time for the public to provide input.
- Create broad, representative input at a local, regional, and national level.
- Educate members of the public on competing and similar interests of all involved groups or individuals.
- Enhance public appreciation of park resources and the challenges of park management.
- Promote understanding of the park's mandate and mission and of its connections to legislation, the ESA, the *National Historic Preservation Act* (NHPA), and other elements.
- Promote public understanding that the NPS policies for national recreation areas do not differ from those of national parks.
- Form positive relationships with stakeholder groups.
- Clarify distinctions and differences among GGNRA and local/regional parks and other local land management agencies.
- Keep elected officials informed.

PUBLIC INVOLVEMENT IN THE ENVIRONMENTAL IMPACT STATEMENT PROCESS

The EIS process formally began with a NOI published in the Federal Register on February 22, 2006, announcing the intention both to prepare this EIS and to begin public scoping. The public was asked to submit comments within 30 days after the NOI publication. In mid-March, the Public Scoping Brochure for the GGNRA draft plan/EIS was mailed to the names on the park's dog management project and general mailing lists for public review and comment. A Notice of Extension of Comment Period was published in the Federal Register on March 29, 2006, to extend the period for public comment on the scope of the planning process and potential alternatives through April 24, 2006. During the scoping period, two public scoping workshops were held. The first was held at the Bay Model Visitor Center in Sausalito on April 4, 2006, and the second was held at the Fort Mason Officers Club on April 5, 2006. Both workshops presented information about current GGNRA dog management and the planning and negotiated rulemaking processes. Park staff and other NPS specialists were on hand to answer questions and provide additional information to workshop participants. During the scoping period, over 500 pieces of correspondence were entered into the NPS Planning, Environment, and Public Comment (PEPC) web-based database, either by direct entry by the commenter, or by uploading of emails, faxes, and hard-copy letters by NPS staff.

The NEPA process for this project was initiated and run concurrently with the negotiated rulemaking process.

In addition to the brochure and workshops, the public was kept up to date on the project by information on the park's project telephone information line and posted on the NPS PEPC web site (http://parkplanning.nps.gov/goga) and the park's web site (www.nps.gov/goga). A summary report of the public comments received during the public scoping phase of the draft plan/EIS was prepared in August 2006 and is posted, along with the NOI and the Public Scoping Brochure (NPS 2006c, 1), on the PEPC web site and linked to the park web site.

As described previously, the NEPA process for this project was initiated and run concurrently with the negotiated rulemaking process. During the negotiated rulemaking process the public had additional opportunities for listening and providing input by attending the seven meetings of the full Negotiated Rulemaking Committee.

On January 14, 2011, the NPS released the draft plan/EIS to the public for review and comment. The draft plan/EIS was available for public review until May 30, 2011. Following the release of the draft plan/EIS and during the public comment period, public meetings were held in March 2011 for the public to submit comments on the draft plan/EIS.

A total of four public meetings were held in Marin, San Francisco, and San Mateo counties. Meetings were held in Mill Valley on March 2nd; in San Francisco on March 5th and 7th; and in Pacifica on March 9th. Three of the meetings were held in the evening from 4:00 until 8:00 p.m.; one San Francisco meeting was held during the day, from 11:00 a.m. until 4:00 p.m. The public meetings were in an open house format, with approximately 20 NPS staff on hand to discuss the plan with meeting attendees, answer questions and facilitate public input on the plan. The public were able to submit their comments on the draft plan/EIS using any of the following methods:

- Electronically through the NPS PEPC website
- In person at the public meetings
- By mailing comments to the GGNRA Superintendent.

The NPS received nearly 5,000 pieces of correspondence containing over 7,900 individual comments during the comment period from over 31 states. The majority of correspondence (4,463) was submitted by California residents. Among the commenters from California, the topics that received the majority of the comments were expressions of support for, or opposition to, the draft plan/EIS; expressions of support for, or opposition to, the different alternatives at each site; concerns regarding the park visitor experience; concerns for wildlife and wildlife habitat and concerns about the health and safety of individuals and dogs. A public comment analysis report was prepared and is posted on the GGNRA dog management website, http://www.nps.gov/goga/parkmgmt/dog-management.htm and NPS PEPC website http://parkplanning.nps.gov/projectHome.cfm?projectID=11759.

On September 6, 2013, the NPS released the draft plan/SEIS for a 90-day public review and comment period. Following the government shutdown in October, the comment period was extended 38 days, to January 11, 2014. However, due to continued concern from some stakeholders, the comment period was extended a second time, to Tuesday, February 18, 2014. The draft plan/SEIS responded to the substantive public comments on the draft plan/EIS and included an analysis of dog management for Rancho Corral de Tierra, a site in San Mateo County that was added to the park in December 2011, after the development and release of the draft plan/EIS. As a result of the consideration of substantive comments made on the 2011 draft plan/EIS, the draft plan/SEIS incorporated new data, considered additional research, made some changes to the impacts analysis, revised the management strategy to accentuate and expand monitoring and eliminate automatic triggers, evaluated fencing as a future management tool to manage dog walking impacts, adjusted the preferred alternative at several sites, and included site specific alternatives and analysis for Rancho.

During the comment period, three public open house-format meetings were held in the San Francisco Bay Area from November 2, 2013, through November 6, 2013. Meetings were held at Fort Mason Center in San Francisco, CA (Saturday, November 2), Farallone View Elementary School in Montara, CA (Monday, November 4), and Tamalpais High School in Mill Valley, CA (Wednesday, November 6). The Saturday meeting ran from 11:00 a.m. to 4:00 p.m., the Monday meeting was held from 4:30 p.m. to 8:30 p.m., and the Wednesday meeting was held from 4:00 p.m. to 8:00 p.m. During the open houses, multiple stations were set up to allow the public to review the elements and alternatives of the draft plan/SEIS and ask questions of the NPS staff at each station. The public were able to submit their comments on the draft plan/SEIS using any of the following methods:

- Electronically through the NPS PEPC website
- In person at the public meetings
- By mailing comments to the GGNRA Superintendent.

The NPS received over 6,700 pieces of correspondence from 34 states during the comment period on the draft plan/SEIS. The majority of correspondence (6,198) was submitted by California residents. Among the commenters from California, the topics most frequently mentioned were support for, or opposition to, the draft plan/SEIS; support for, or opposition to, the different alternatives at each site; concerns regarding visitor experience; concerns for wildlife and wildlife habitat; and concerns about the health and safety of individuals and dogs. A public comment analysis report was prepared for the draft plan/SEIS and is posted on the NPS PEPC website https://parkplanning.nps.gov/document.cfm?parkID=303&projectID=11759&documentID=70884.

RELATED LAWS, REGULATIONS, AND POLICIES

GGNRA is guided by a variety of legal directives, including federal and state laws, regulations, executive orders, NPS management policies, director's orders, other agency and departmental policies, decisions made through other NEPA planning processes, and legal agreements. Foremost among these directives is the *NPS Organic Act of 1916* and its interpretation in the NPS *Management Policies 2006* (NPS 2006a, 10). Park units also turn to their park-specific enabling legislation to determine the park purpose, significance, and mission (why the unit was established as a park, its unique features, and what the park should accomplish).

NATIONAL PARK SERVICE ORGANIC ACT AND MANAGEMENT POLICIES

By enacting the *NPS Organic Act of 1916* (Organic Act), Congress directed the U.S. Department of the Interior and the NPS to manage units "to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such a manner and by such a means as will leave them unimpaired for the enjoyment of future generations" (54 USC 100101(a), 100301 et seq.). The Organic Act prohibits actions that impair park resources unless a law directly and specifically allows for these actions (54 USC 100101). An action constitutes an impairment when its impacts "harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values" (NPS 2006a, 11). Congress reiterated this mandate in the *Redwood National Park Expansion Act of 1978* by stating that the NPS must conduct its actions in a manner that will ensure no "derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress" (54 USC 100101).

Despite these mandates, the Organic Act and its amendments afford the NPS latitude when making resource decisions that provide both visitor recreation and resource preservation. In these acts, Congress "empowered [the NPS] with the authority to determine what uses of park resources are proper and what proportion of the park's resources are available for each use" (*Bicycle Trails Council of Marin v. Babbitt*, 82 F.3d 1445, 1453 (9th Cir. 1996)).

Because conservation remains its predominant mandate, the NPS seeks to avoid or to minimize adverse impacts on park resources and values.

The NPS has discretion to allow negative impacts when necessary (NPS 2006a, 10); however, while some actions and activities cause impacts, the NPS cannot allow an adverse impact that constitutes impairment (NPS 2006a, 11). To determine impairment, the NPS must evaluate "the severity, duration, and timing of

the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts" (NPS 2006a, 11). The NPS *Management Policies 2006* require that these determinations, and all planning decisions in the Service, be based on current scientific and scholarly understanding of park resources and ecosystems, as well as professional judgment of the NPS decision maker (NPS 2006a, 11, 12, 24). The NPS *Management Policies 2006* also have separate chapters on the appropriate management of the parks and their resources (e.g., wilderness, natural resources) and state that "the law enforcement program is an important tool in carrying out the NPS mission" (NPS 2006a, 108).

Park units vary in their enabling legislation, natural resources, cultural resources, and missions. Management activities appropriate for each unit and for areas within each unit vary as well. An action appropriate in one unit could impair resources or values in another unit. Thus, this final plan/EIS will analyze the context, duration, and intensity of impacts related to dog management only within GGNRA, as well as the potential for resource impairment, as required by the NPS *Director's Order #12* and handbook (NPS 2015).

Impairment of National Park Resources

In addition to determining the environmental consequences of implementing the preferred and other alternatives, NPS *Management Policies 2006* (Section 1.4) requires analysis of potential effects to determine whether or not proposed actions would impair a park's resources and values.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the *General Authorities Act*, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the NPS the management discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of the park. That discretion is limited by the statutory requirement that the NPS must leave resources and values unimpaired unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values (NPS 2006a). Whether an impact meets this definition depends on the particular resources that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

An impact on any park resource or value may, but does not necessarily, constitute impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- identified in the park's general management plan (GMP) or other relevant NPS planning documents as being of significance.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated.

Impairment may result from visitor activities; NPS administrative activities; or activities undertaken by concessioners, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park.

Impairment findings are not necessary for visitor experience, public health and safety, environmental justice, and park operations, etc., because impairment findings relate back to park resources and values. A written non-impairment determination will ultimately be prepared for the selected action and appended to the record of decision.

GOLDEN GATE NATIONAL RECREATION AREA LAWS, POLICIES, AND PLANS

Golden Gate National Recreation Area Enabling Legislation

The enabling legislation requires that the park and its visitors "utilize the resources in a manner which will provide for recreation and education opportunities consistent with sound principles of land use planning and management…"

GGNRA was established by Congress in 1972 (PL 92-589). The language of the enabling legislation states the park's purpose as follows: "In order to preserve for public use and enjoyment certain areas of Marin and San Francisco counties, California, possessing outstanding natural, historic, scenic, and recreational values and in order to provide for the maintenance of needed recreational open space necessary to urban environment and planning, the Golden Gate National Recreation Area is hereby established." The hearing records pertinent to the enabling legislation reveal that the future use of the park was the subject of considerable discussion. The nearby presence of several million people provided an unprecedented opportunity to make national park resources and programs available to a wide variety of visitors, many of whom had not been able or willing to access the more remote national parks. Based on the record, this "parks to the people" idea was clearly intended by Congress and the administration to be a major purpose of GGNRA (NPS 1980, 7).

The enabling legislation also requires that the park and its visitors "utilize the resources in a manner which will provide for recreation and education opportunities consistent with sound principles of land use planning and management," and that the recreation area be preserved "as far as possible in its natural setting" and protected from uses that would "destroy the scenic beauty and natural character of the area."

The Golden Gate National Recreation Area General Management Plan

The NPS has updated the original GGNRA GMP (NPS 1980, 1) and published the Final GGNRA and Muir Woods National Monument GMP/EIS in 2014. A GMP is a document that ensures that a park has a clearly defined direction that sets achievable and sustainable goals for resource preservation and visitor use. GGNRA constitutes one of the largest urban national parks in the world, encompassing many miles of bay and ocean shorelines. The park is diverse in natural, cultural, and historic resources, drawing in approximately 16-20 million visitors per year. Although Muir Woods National Monument is managed as part of GGNRA it is not included in this final plan/EIS. Muir Woods has never been open to dog walking, and thus was not under consideration for dog walking in this planning process. Since the 1980 GMP, a number of changed circumstances, including an increased demand for use of the park sites for recreational activities, have created the need for an updated GMP (NPS 2014).

Management objectives in the 2014 GMP that are relevant to dog management include the following:

- The park has significantly expanded in size and includes many new lands in San Mateo County. This planning process takes a comprehensive parkwide approach that will help ensure that the

management of the natural and cultural resources and visitor experiences are consistent and thorough across all park areas.

- There is an increased public demand for access to, and use of, open spaces within the San Francisco Bay region. The GMP provides a regional collaborative approach to open space preservation and recreation use.
- The changing demographics in the Bay Area are bringing notable shifts in park visitation, uses, and trends. The GMP provides desired conditions that will guide the decision making needed to manage the anticipated visitation growth.
- Through research and park management that have occurred since the 1980 plan, the park staff has gathered a considerable amount of new information and knowledge regarding resources and visitor use. This new awareness is reflected in the desired conditions, proposed management actions, and policies of this GMP.

Since 1980, GGNRA has doubled in size, and park staff members have gained a better understanding of the natural and cultural resources and recreational uses within the park. Although always valued for its preservation of public open spaces, GGNRA is now considered to be one of the most biologically diverse areas along the California coast and is recognized by the United Nations as part of the Golden Gate Biosphere Reserve. Numerous and varied landscapes, including military landscapes, ranch sites, and historic districts, have been identified in the park since 1980, expanding awareness of the park's historical importance.

The GMPs preferred alternative for San Mateo, San Francisco, and Marin counties of GGNRA is based on a plan to connect people to the park. The GMP explains the rationale for this alternative:

> This concept emphasizes the park's management commitment to the founding idea of "parks to the people," and the park's fundamental purpose of bringing national park experiences to a large and diverse urban population. Improving connections between the park and the people is fundamental to achieving the park's purpose and to maintaining the public's continued interest and support (NPS 2014).

The GMP has deferred site-specific, dog management planning to this final plan/EIS. If needed, the GMP could be amended by the final dog management plan/EIS; however, the two plans are consistent in part because they were developed concurrently, with the GMP using the same basic resource information obtained during the concurrent dog management effort, which began earlier than the GMP planning effort. GMP zoning is consistent with dog management planning because the underlying resource information and concerns are the same. The preferred alternative in the GMP will be implemented as the new management plan for the next 20 years.

Crissy Field Plan Golden Gate National Recreation Area Environmental Assessment

The EA for the Crissy Field Plan (NPS 1996, 1) was developed for a cultural and ecological restoration of Crissy Field that would be consistent with the NPS mission of conservation. The proposal also allowed Crissy Field to maintain its role in San Francisco as a "people place" that provides a variety of recreational activities and offers ways to enhance that role. The plan was based on the NPS GMP Amendment (GMPA) (NPS 1994, 1) and formulated on a public involvement process.

The Crissy Field Plan included the restoration of a 20-acre portion of a historical tidal marsh and the cultural resources of the historic airfield, the establishment of a waterbird protection area, and

improvements to parking, transportation, and circulation at Crissy Field. The plan also had the objective of continuing existing multiple recreational opportunities, including voice control dog walking.

General Management Plan Amendment, Presidio of San Francisco / Presidio Trust Management Plan

GGNRA legislation ensured that if the military deemed the Presidio of San Francisco in excess of its needs, jurisdiction would be transferred to the NPS. In 1989 the Presidio was designated for closure, and in 1994 the U.S. Army transferred the Presidio to the NPS. The GMPA (NPS 1994, 1) was developed by the NPS to provide direction and policy guidance in the transition of this former military post to a unit of the NPS, and provide guidelines for management, use, and development of the overall site. The GMPA assumed that a federally chartered partnership institution would be established under the U.S. Department of the Interior with the NPS retaining primary oversight and management responsibility for the entire Presidio.

However, in 1996, two years after the NPS adopted the GMPA, Congress passed the *Presidio Trust Act*, creating the Presidio Trust as a wholly owned, federal government corporation and granting jurisdiction of the 1,168-acre interior area of the Presidio, known as Area B, to the Presidio Trust. This transferred jurisdiction of Area B from the Secretary of the Interior to the Trust and required that the Trust conform only to the purposes of the GGNRA establishing legislation and the general objectives of the GMPA.

In 2002, the Presidio Trust approved the Presidio Trust Management Plan to update and supersede the GMPA in Area B. The Presidio Trust Management Plan EIS acknowledges that the NPS is currently engaged in a process that could ultimately lead to a rulemaking procedure to develop new dog management regulations for GGNRA and that the Trust is closely monitoring this rulemaking process and "will give future consideration to its regulation regarding dogs once the GGNRA rulemaking process is concluded" (Presidio Trust 2002, 2:4-225). Management objectives in the Presidio Trust Management Plan that the Presidio Trust, in their comment letter on the draft plan/EIS, identified as relevant to dog management include the following:

- Provide for safe and enjoyable recreational use of the Presidio.
- Identify and protect sensitive wildlife species, and restore and maintain their habitats.
- Provide diverse opportunities for both passive and active recreation.
- Maintain an atmosphere that is open, inviting, and accessible to visitors.
- Consider activities best suited to the Presidio.
- Balance recreational opportunities with resource protection; to achieve this balance, consider the type and level of visitor use that can be accommodated while sustaining the desired resource and visitor experience conditions.

In August 2014, the Presidio Trust published a final rule imposing a public use limit on persons (commercial dog walkers) who are walking four or more dogs at one time in Area B of the Presidio. These actions are interim and will remain in effect until the final special regulation for dog walking in GGNRA is adopted.

OTHER FEDERAL REGULATIONS, LAWS, AND POLICIES

The NPS is also governed by multiple laws, regulations, and management plans relevant to this planning effort. The following excerpts describe those that are key to this planning effort.

NATIONAL ENVIRONMENTAL POLICY ACT, 1969, AS AMENDED

Section 102(2)(C) of this act requires that an EIS be prepared for proposed major federal actions that may significantly affect the quality of the human environment.

NATIONAL PARKS OMNIBUS MANAGEMENT ACT OF 1998

The *National Parks Omnibus Management Act* (54 USC 100701 et seq.) underscores NEPA in that both are fundamental to NPS park management decisions. Both acts provide direction for articulating and connecting resource management decisions to the analysis of impacts, using appropriate technical and scientific information. Both also recognize that such data may not be readily available, so they provide alternative options for resource impact analysis should this be the case. Specifically, the *National Parks Omnibus Management Act* directs the NPS to use the findings of science and the analyses of scientifically trained resource specialists in decision making. It also provides guidance for the issuance of commercial use authorizations and concessions contracts.

PRESIDIO TRUST ACT

The Presidio Trust manages the interior 80 percent of Presidio lands (known as Area B) and NPS manages the coastal areas of Presidio lands (known as Area A). The agencies work together to preserve open spaces, improve the Presidio trail system, and provide visitor programs. The Presidio Trust's regulations are issued pursuant to the Presidio Trust Act (16 USC 460bb appendix), as amended in December 2001, and are elements of federal law. Area B is subject to the Presidio Trust's regulations, which the Trust adopted after publication for comment and which appear as 36 CFR 1001. Presidio Trust regulations do not allow dogs to be off leash in Area B (Presidio Trust 2002, 161).

ENDANGERED SPECIES ACT OF 1973, AS AMENDED

This act requires all federal agencies to consult with the Secretary of the Interior on all projects and proposals having potential impacts on federally threatened and endangered plants and animals.

MIGRATORY BIRD TREATY ACT AND EXECUTIVE ORDER 13186

The *Migratory Bird Treaty Act of 1918* makes it unlawful to kill, capture, buy, sell, import, or export migratory birds, eggs, feathers, or other parts. Executive Order 13186, issued in January 2001, restated the value of migratory birds and directed agencies to develop and implement memoranda of understanding with the U.S. Fish and Wildlife Service (USFWS) to protect them. The NPS memorandum of understanding, signed in 2010, requires park units to restore and enhance migratory bird habitat and support conservation of migratory birds.

THE NATIONAL HISTORIC PRESERVATION ACT OF 1966, AS AMENDED

Section 106 of the NHPA requires that federal agencies consider the effects of their undertakings on properties listed or potentially eligible for listing on the National Register of Historic Places (NRHP). All actions affecting the parks' cultural resources must comply with this legislation.

COASTAL ZONE MANAGEMENT ACT

The *Coastal Zone Management Act* was enacted as a plan to manage coastal areas. The *Coastal Zone Management Act* encourages state, local, regional, and federal agencies to cooperate when implementing

their coastal zone programs. The act requires a balance between the protection of resources and economic interests within the coastal zone. Each state may develop a coastal zone management plan, which defines allowed land and water uses within the coastal zone.

CODE OF FEDERAL REGULATIONS

The regulations under title 36 of the CFR provide "for the proper use, management, government, and protection of persons, property, and natural and cultural resources within areas under the jurisdiction of the National Park Service." The sections below are specifically called out as relevant to the final plan/EIS. Sections of Title 36 of the CFR are included as appendix D of this document. Regulations under title 50 of the CFR address management of wildlife and fisheries.

36 CFR 1.5 (f) covers closures and public use limits in units of the national park system that are required for public safety, protection of resources, for scientific research, management responsibilities, or avoidance of conflict between user groups. This includes a provision stating that the violation of any closure, designation, use activity restriction or condition, the schedule of visiting hours, or public use limits is prohibited.

36 CFR 2.1 covers the preservation of natural, cultural, and archeological resources. The following is prohibited under this section: possessing, destroying, injuring, defacing, removing, digging, or disturbing from its natural state living or dead wildlife, plants, or cultural or archeological resources; and walking on, climbing, entering, etc. an archeological or cultural resource.

36 CFR 2.2 covers wildlife protection. The following is prohibited under this section: the taking of wildlife; the feeding, touching, teasing, frightening, or intentional disturbing of wildlife nesting, breeding, or other activities; and possessing unlawfully taken wildlife or portions thereof.

36 CFR 2.15 lists the regulations for pets:

(a) The following are prohibited:

  (1) Possessing a pet in a public building, public transportation vehicle, or location designated as a swimming beach, or any structure or area closed to the possession of pets by the superintendent. This subparagraph shall not apply to guide dogs accompanying visually impaired persons or hearing-ear dogs accompanying hearing-impaired persons.

  (2) Failing to crate, cage, restrain on a leash which shall not exceed six feet in length, or otherwise physically confine a pet at all times.

  (3) Leaving a pet unattended and tied to an object, except in designated areas or under conditions which may be established by the superintendent.

  (4) Allowing a pet to make noise that is unreasonable considering location, time of day or night, impact on park users, and other relevant factors, or that frightens wildlife by barking, howling, or making other noise.

  (5) Failing to comply with pet excrement disposal conditions which may be established by the superintendent.

(b) In park areas where hunting is allowed, dogs may be used in support of these activities in accordance with applicable federal and state laws and in accordance with conditions which may be established by the superintendent.

(c) Pets or feral animals that are running-at-large and observed by an authorized person in the act of killing, injuring, or molesting humans, livestock, or wildlife may be destroyed if necessary for public safety or protection of wildlife, livestock, or other park resources.

(d) Pets running-at-large may be impounded, and the owner may be charged reasonable fees for kennel or boarding costs, feed, veterinarian fees, transportation costs, and disposal. An impounded pet may be put up for adoption or otherwise disposed of after being held for 72 hours from the time the owner was notified of capture or 72 hours from the time of capture if the owner is unknown.

(e) Pets may be kept by residents of park areas consistent with the provisions of this section and in accordance with conditions which may be established by the superintendent. Violation of these conditions is prohibited.

(f) This section does not apply to dogs used by authorized federal, state, and local law enforcement officers in the performance of their official duties.

36 CFR 2.31 prohibits trespassing, tampering, and vandalism of property. Vandalism includes destroying, injuring, defacing, or damaging property or real property.

36 CFR 2.34 prohibits disorderly conduct. This section would include dogs that are unmanaged and are creating hazardous or physically offensive conditions.

36 CFR 7.97(d) describes the seasonal dog walking restrictions for western snowy plovers in the SPPA at Ocean Beach and in the WPA at Crissy Field.

50 CFR 17 implements the ESA of 1973, and includes provisions to identify wildlife and plants determined to be threatened or endangered.

36 CFR Part 1002 places a public use limit on persons walking four or more dogs at one time in Area B of the Presidio. This final rule was released in August 2014 and would require commercial dog walkers in Area B to possess a valid commercial dog walking permit issued by the NPS and to comply with the terms and conditions of the NPS permit as well as those rules and regulations otherwise applicable to Area B. These actions are interim and will remain in effect until the final special regulation for dog walking in GGNRA is adopted.

NATIONAL PARK SERVICE DIRECTOR'S ORDERS

Director's Order #9 (NPS 2006d) (Chapter 4.6 Community Relations and Outreach) directs efforts to identify appropriate opportunities to enhance the effectiveness of by assisting in public education and awareness about the full range of threats to and the challenges of protecting park resources.

Director's Order #12 (NPS 2011d) prescribes NPS-specific requirements for NEPA analysis, including analyzing a full range of reasonable alternatives, and analyzing impacts to park resources in terms of their context, duration, and intensity. *Director's Order #12* also requires that an analysis of impairment to park resources and values be made as part of the NEPA document.

Director's Order #28 (NPS 1998) states that NPS will protect and manage cultural resources in agreement with NPS *Management Policies 2006*. NPS will also comply with the requirements of the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation and the 1995 Service-wide Programmatic Agreement with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers (SHPOs).

Director's Order #75A (NPS 2007a) emphasizes the NPS commitment to civic engagement and public involvement. It provides a framework for successfully engaging the public in NPS activities and work and providing them with information from a range of sources. The order also ensures NPS responsiveness to the concerns, views, and values of the public. It provides guidance and direction on ways to engage the public in decisions at park and program levels and establishes processes that can track improvements to civic engagement and involvement within NPS.

STATE AND LOCAL LAWS, REGULATIONS, AND POLICIES

The following laws, regulations, and policies are currently in effect or are being developed for future application by other land management agencies in the Bay Area:

California State Park System. As stated previously in the "Summary of Background Conditions and Review of Literature" section, dog walking is permitted in most state parks and some beaches but dogs are either restricted to developed areas (e.g., picnic areas and campgrounds) or dogs must be in an enclosed vehicle, tent, or pen or be on a leash not more than six feet long.

California State Water Resources Control Board. The Board disseminates information on pet waste pollution and the need to comply with county ordinances (California State Water Resources Control Board 2009, 1).

Marin County. This county includes both unincorporated Marin County (rules enforced by the Marin County Humane Society) and Marin County Open Space (rules enforced by the County of Marin Rangers). As stated previously in the "Summary of Background Conditions and Review of Literature" section, dog regulations in Marin County range from allowing off-leash dogs under immediate control to requiring that dogs be on a leash no longer than six feet in length in areas designated for dog walking. Marin County Municipal Code 8.04.185 states that "it is unlawful for any person to keep or harbor more than three dogs which are over the age of four months on any lot, premises, dwelling, building, structure, boat, or living accommodation."

Marin Municipal Water District. As stated previously in the "Summary of Background Conditions and Review of Literature" section, on-leash dog walking is permitted in the District but dogs are not allowed to enter, wade, or swim in any stream or reservoir or enter within the high water mark of any reservoir (Marin Municipal Water District 2002, 26).

Midpeninsula Regional Open Space District. As stated previously in the "Summary of Background Conditions and Review of Literature" section, dogs are allowed on all trails in six of 25 preserves in this District and on designated trails in four additional preserves; off-leash dogs are permitted only in the marked area of the Pulgas Ridge Preserve.

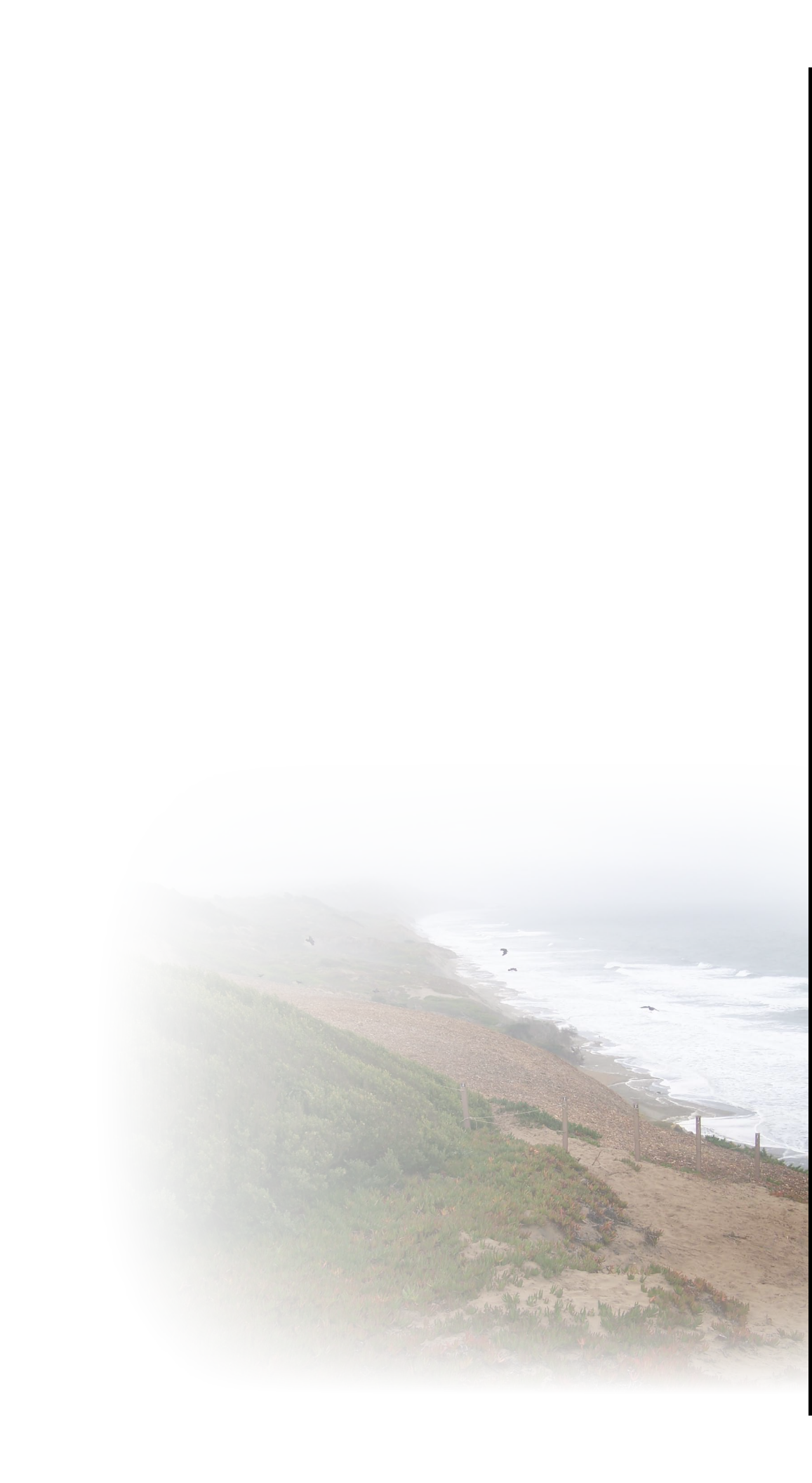
City/County of San Francisco. The Municipal Health Code—SEC. 37—Keeping and Feeding of Small Animal, Poultry and Game Birds (a) Number of Animals states that "it shall be unlawful for any person, firm or corporation to keep or feed, or cause to be kept or fed, or permit to be kept or fed, on any premises over which any such person, firm, or corporation may have control within residential districts, (1) more than three dogs of age six months or older without obtaining a proper permit and license to operate a dog kennel as defined in Section 220 of the San Francisco Business and Tax Regulations Code."

San Francisco Recreation and Park Department. As stated previously in the "Summary of Background Conditions and Review of Literature" section, dogs are generally required to be on a leash no longer than six feet in length in San Francisco city parks unless dogs are using one of the established DPAs; 28 DPAs have been established within 24 city parks of San Francisco.

San Francisco Public Utilities Commission. Only limited public access is allowed within the San Francisco watershed lands. Walking of domestic dogs is prohibited within the watershed lands with the exception of guide, search and rescue, and police dogs. The San Francisco Public Utilities Commission has also instituted a citywide pet waste pollution prevention program to encourage compliance with 7.2 Health Code Section 40, requiring pet waste pick-up (SFPUC 2007, 1).

San Mateo County. The San Mateo County Ordinance Code 6.20.020—The Keeping of Dogs and Cats (a) states that "it shall be unlawful for any person, business or entity to keep or cause to be kept five (5) or more dogs, or five (5) or more cats, or five (5) dogs and cats in any combination per dwelling unit or per business establishment unless in conformance with this chapter." As stated previously in the "Summary of Background Conditions and Review of Literature" section, in San Mateo, dogs are generally not allowed in any county park and must be on leash when on public property or not in a fully enclosed area (County of San Mateo 2012).

Pacifica. Pacifica is the closest city to NPS lands within San Mateo County. As stated by the Pacifica Permit Office, the number of dogs within a household has no upper limit; however, a permit is required if a household has more than three dogs. Dogs are allowed on leash at Pacifica parks and beaches, and there are two off-leash areas within the city.



Alternatives

CHAPTER 2: ALTERNATIVES

INTRODUCTION

This "Alternatives" chapter describes current management and the various actions that could be implemented for future dog management within Golden Gate National Recreation Area (GGNRA or park). The *National Environmental Policy Act of 1969* (NEPA) requires that federal agencies explore a range of reasonable alternatives and provide an analysis of what impacts the alternatives could have on the natural and human environment. "Chapter 4: Environmental Consequences" of this Final Dog Management Plan / Environmental Impact Statement (final plan/EIS) presents the results of the analysis.

The alternatives under consideration must include a "no action" alternative as prescribed by 40 CFR 1502.14. The no-action alternative in this final plan/EIS is the continuation of the current National Park Service (NPS) regulations, the GGNRA Compendium, management policies, and a legally prescribed practice for dog management within GGNRA – the 1979 Pet Policy pursuant to *U.S. v. Barley* (405 F.Supp.2d 1121 (N.D. Cal. 2005)). The no-action alternative assumes that the NPS would not make major changes to current management. The five action alternatives presented in this chapter were developed from consideration of current laws, regulations, policies and sources of information as listed in chapter 1, including the following:

- The GGNRA Citizen's Advisory Commission's 1979 Pet Policy (appendix A)
- NPS *Management Policies 2006* (NPS 2006a)
- Title 36 of the Code of Federal Regulations (CFR) (sections are included in appendix D)
- The *Endangered Species Act* (ESA)
- The National Park Service *Organic Act*
- The GGNRA enabling legislation
- The GGNRA Compendium (NPS 2016; appendix B)
- The Federal Panel Recommendations to the General Superintendent on Proposed Rulemaking for Pet Management at GGNRA (NPS 2002a)
- Findings of the Negotiated Rulemaking Committee for Dog Management at GGNRA
- The 2005 federal court decision (*U.S. v. Barley*, 405 F.Supp.2d 1121 (N.D. Cal. 2005))
- Information from review of park resources, visitor use information and surveys, and feedback received during the NEPA and negotiated rulemaking public comment processes.

STUDY AREA DEFINITION

Primarily because of GGNRA's proximity to a large urban population center, there is a history of dog walking in some park sites prior to the establishment of GGNRA in 1972, when these sites were managed by various other agencies.

Alternatives in this final plan/EIS address locations in Marin, San Francisco, and San Mateo counties. The selection of sites addressed in this final plan/EIS was determined by NPS managers, and was based on information from historical and current dog management in GGNRA, including the 1979 Pet Policy; NPS law, policy, and regulations; park resources; and the Federal Panel Recommendations to the General

Superintendent (NPS 2002a). The panel concluded that off-leash dog walking in GGNRA may be appropriate in selected locations where resource impacts can be adequately mitigated and public safety incidents and public use conflicts can be appropriately managed.

In addition to lands currently under GGNRA management, the final plan/EIS includes one site within the park's boundary in San Mateo County that is expected to be transferred to GGNRA in the near future: Cattle Hill. When the dog management planning process started, this site was included because it was anticipated that the area would be acquired in the immediate future; this action is still pending. Another San Mateo property, Rancho Corral de Tierra, was transferred to the NPS in December 2011. This property was addressed in the New Lands section in the draft plan/EIS; in the draft plan/SEIS and in this final plan/EIS, Rancho Corral de Tierra is addressed as a separate site. Table 2 lists the sites now being considered under the action alternatives for this final plan/EIS.

This final plan/EIS defines dog management actions for the specific sites within the park shown in table 2. Site-specific maps located in the "Maps" section of this document show park sites by county, from north to south, illustrating the current and proposed dog walking management (see "Maps").

TABLE 2. GOLDEN GATE NATIONAL RECREATION AREA PARK SITES CONSIDERED FOR DOG MANAGEMENT IN THE ALTERNATIVES

Marin County
Stinson Beach (parking lots/picnic areas only)
Homestead Valley
Alta Trail / Orchard Fire Road / Pacheco Fire Road
Oakwood Valley
Muir Beach
Rodeo Beach / South Rodeo Beach
Marin Headlands Trails
Fort Baker
San Francisco County
Upper and Lower Fort Mason
Crissy Field (including Crissy Field Wildlife Protection Area (WPA))
Fort Point Promenade / Fort Point National Historic Site (NHS) Trails
Baker Beach and Bluffs to Golden Gate Bridge
Fort Miley
Lands End
Sutro Heights Park
Ocean Beach (including Ocean Beach Snowy Plover Protection Area (SPPA))
Fort Funston
San Mateo County
Mori Point
Milagra Ridge
Sweeney Ridge / Cattle Hill
Rancho Corral de Tierra

GGNRA lands north of Bolinas-Fairfax Road in western Marin County (comprising approximately 14,357 acres) are managed by the Point Reyes National Seashore under an agreement between the two NPS units. The interior portion of the Presidio of San Francisco (Area B), bounded by Mason Street on the north and Lincoln Avenue on the west, is managed by the Presidio Trust, a federal corporation. Because these areas are not under the direct management of GGNRA, they are not included in the dog management study area. As mentioned in chapter 1, Pedro Point, which was included in the draft plan/SEIS, will remain under the management of San Mateo County; therefore, all references to Pedro Point have been removed from this final plan/EIS.

ALTERNATIVES DEVELOPMENT PROCESS

RANGE OF ALTERNATIVES

The management actions under consideration within GGNRA sites are detailed in the range of alternatives presented in this chapter. A summary of the alternative elements is presented in table 4 at the end of this chapter.

Alternative A is the no-action alternative. The no-action alternative is defined in NEPA guidelines as no change from current management and current conditions (Council on Environmental Quality (CEQ) 1981, Question 3). In the impact analysis of no-action, the final plan/EIS assumes current management would continue as it is now over the lifetime of the plan, which is 20 years. The description of no-action is also referred to in this final plan/EIS as the current conditions, and the impacts of each action alternative are analyzed against those of the current conditions for comparative purposes. Under the no-action alternative, current dog walking management and conditions would remain the same, which would include 36 CFR 2.15 (36 CFR 2.15(a)(2) (applicable only in areas not addressed by the 1979 Pet Policy—see below), 36 CFR 7.97(d), the GGNRA Citizens Advisory Commission's 1979 Pet Policy (appendix A), and the GGNRA Compendium (NPS 2016; appendix B). The 1979 Pet Policy allows voice control dog walking in a number of areas of GGNRA (table 4). The 1979 Pet Policy described voice or leash control as a flexible system wherein success is dependent upon the willingness of visitors and local residents to cooperate with GGNRA personnel and the willingness of GGNRA personnel to manage dogs, people, and wildlife situations; to enforce regulations; and to cite visitors (1979 Pet Policy). As a result of the 2005 federal court decision (*U.S. v. Barley*, 405 F.Supp.2d 1121 (N.D. Cal. 2005)), the NPS currently can neither enforce the NPS-wide regulation requiring pets to be on leash (36 CFR 2.15(a)(2)) nor restrict or prohibit dog walking in park sites that were included in the 1979 Pet Policy because 36 CFR 1.5(b) (requiring public notice and comment rulemaking for actions of a highly controversial nature) was not followed for any dog management changes. However, NPS regulations that address disturbance to wildlife, removal of pet waste, and disturbance of other park visitors remain in effect in all areas open to dog walking in GGNRA. The GGNRA Compendium also includes provisions for the closure of park areas to visitors, including areas closed to dog walkers, for resource or safety reasons. Under the current conditions commercial dog walkers use park lands and no permit is required.

Alternative B realigns GGNRA dog management to the policy governing dog walking at the other 397 units of the national park system, as defined by 36 CFR 2.15(a)(2). Any areas to be closed to dog walking would be included in a special regulation or the GGNRA Compendium. All dog walkers, including commercial dog walkers, would be allowed up to three dogs per person. All dogs would have to be on leash and no permits would be needed for dog walking. This alternative provides a mix of visitor experiences, including opportunities for visitors with disabilities.

Alternative C emphasizes the diversity of users of GGNRA sites and apportions dog walking geographically across Marin, San Francisco, and San Mateo counties by allowing a variety of options in each county. In Marin, San Francisco, and San Mateo counties, there are options for on-leash areas, voice

and sight control areas (VSCAs) ("off leash" is assumed to mean "under voice and sight control" throughout the description of the action alternatives, per the definition outlined in "Dog Walking Requirements" in appendix E of this final plan/EIS), and areas where dogs would be prohibited. GGNRA is used by visitors for a multitude of purposes and alternative C would minimize potential conflicts, reduce potential health and safety issues, provide opportunities for visitors with disabilities, and protect natural and cultural resources, while providing dog walkers with a variety of recreational options. Alternative C also includes the consensus agreements resulting from the Negotiated Rulemaking Committee meetings. All dog walkers, including commercial dog walkers, would be allowed to walk up to three dogs without a permit. Any dog walker, commercial or private, would be able to obtain a permit to walk more than three dogs, with a limit of six dogs, whether on leash or in a VSCA, in the seven areas where permitted dog walking would be allowed. Walking four to six dogs would be allowed in all areas open to dog walking, except where noted per site. In specified VSCAs, permit holders could have up to six dogs under voice and sight control. Permits could restrict dog walking use by time and area. Permitted dog walking would not be authorized in picnic areas. Dog walkers would have special use permit (SUP) fees applied throughout the park. See appendix F for SUP conditions and enforcement associated with noncompliance with the permit.

Alternative D would provide the highest overall level of protection for natural and cultural resources and the highest overall level of visitor safety. Dog management practices listed in alternative D would allow options for dogs to be exercised on leash and in VSCAs but would be more protective in areas where natural resources (plant and wildlife species) and cultural resources are located. The more protective dog management elements offered in alternative D would also provide a stronger measure of visitor protection for both dog walkers and other park visitors by reducing circumstances that would cause conflicts among users and interactions among dogs, thereby minimizing direct and indirect effects of dogs on visitors. Alternative D also provides opportunities for visitors with disabilities. Dog walkers would be allowed to walk one to three dogs without a permit. No commercial dog walking would be allowed under this alternative.

Alternative E would provide the greatest level of access for dog walkers throughout GGNRA. Alternative E reflects those portions of the 1979 Pet Policy that can meet the purpose and need of the plan. Because all elements of the 1979 Pet Policy do not meet the purpose and need, particularly the goals of protecting park resources and increasing the safety of visitors, this alternative is more restrictive than the 1979 Pet Policy. Alternative E also assumes compliance with the special regulation to be promulgated, whereas the 1979 Pet Policy in its current form is unenforceable because it is a policy, not a promulgated regulation. For a detailed description of why the 1979 Pet Policy has been considered but dismissed, refer to the "Alternatives Elements Eliminated from Further Consideration" section in this chapter.

Alternative E provides a mix of visitor experiences, including opportunities for visitors with disabilities. It includes the monitoring-based management program; the VSCA guidelines; and elements common to all the action alternatives, including increased education, outreach, and enforcement. Alternative E would also require the most intensive long-term monitoring and management due to having the most areas open to dog walking. Alternative E includes the consensus agreements resulting from the Negotiated Rulemaking Committee meetings. Additionally, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs without a permit. Any dog walker, commercial or private, could obtain a permit to walk up to six dogs in the seven areas that allow permitted dog walking. Walking four to six dogs would be allowed in all areas open to dog walking, except where noted per site. In specified VSCAs, permit holders could have up to six dogs under voice and sight control. Permits could restrict dog walking by time and area. Permitted dog walking would not be authorized in picnic areas. Dog walkers would have SUP fees applied throughout the park. See appendix F for SUP conditions and enforcement associated with noncompliance with the permit.

Alternative F is identified as the NPS preferred alternative; it is a mix of the site-specific action alternatives presented in this final plan/EIS (alternatives B–E), but with some changes based on public comment. These changes are listed under the description of each site.

The following sections describe in detail how these alternatives were developed.

Review of Existing Data and Application of Research

The review of existing information was initiated by the interdisciplinary team first by reviewing information provided by park resource specialists on topics such as sensitive species and their habitats, wildlife, soil, vegetation, park operations, visitor experience, and health and safety to gain the information necessary to stimulate informed discussions. The team also reviewed applicable literature and park documents and visited the park sites addressed in this final plan/EIS. Guided by a NEPA specialist and the Environmental Quality Division project manager, the park held a series of internal scoping sessions with the interdisciplinary team to review the data and determine existing conditions within the park.

Existing conditions at GGNRA vary among park sites due to the diversity of resources within sites, which are scattered throughout three counties. After existing conditions were established, data (soils, vegetation, etc.) for each park site were characterized to more fully understand the park's resources, the visitor experience, and the impacts of dog walking activities at each park site, developing an informed basis for future management decisions. Addressing the issue by individual park site allowed a level of specificity and provided an organizational tool to help analyze potential resource impacts under each of the action alternatives described in this chapter. This site-specific analysis was a useful tool in gauging how each of the management alternatives met the objectives in taking action, as described in "Chapter 1: Purpose and Need for Action."

To aid in their deliberations, the Negotiated Rulemaking Committee received a number of presentations from the NPS interdisciplinary team and other NPS staff explaining the NEPA process and the rationale for determining which GGNRA sites could be considered for dog walking. NPS staff also presented resource information for the sites under consideration for dog walking that had been gathered for the park interdisciplinary team meetings.

Following the public comment period for the draft plan/EIS, another detailed literature review was performed. Public comments included many studies suggested for inclusion in the draft plan/SEIS. Public comments also suggested deleting some of the studies that had been previously used in the draft plan/EIS. An NPS review of the literature suggested by public commenters included a summary of the suggested documents, a determination if the citation had been peer reviewed, and the number of times the document had been cited in other literature. Following the preparation of the literature review, the interdisciplinary team, with input from other NPS senior staff, determined which documents would be used in the preparation of the draft plan/SEIS. Citations were chosen for incorporation if the document had been previously peer reviewed, if methods in the studies had been previously peer reviewed, or if the document was cited in other literature. Citations not meeting these criteria were either not incorporated in the draft plan/SEIS or incorporated in the draft plan/SEIS as background information but not used to form conclusions or management decisions.

In addition, the interdisciplinary team met to revise the action alternatives based on public comments received. The objective of the meeting was to review the public's suggestions to alternatives that met the park objectives for this plan, determine what suggestions would be feasible, and adjust the action alternatives as necessary. Senior NPS staff not employed at GGNRA participated in the meeting to provide an outside perspective on managing natural resources and managing large, urban parks.

This section provides an overview of how the analysis of data, expert opinion, and best professional judgment was applied to develop management alternatives. "Chapter 4: Environmental Consequences" provides further details of how research was used to evaluate the effects of those management alternatives.

Development of Management Actions for Alternatives B, C, D, E, and F

As discussed in chapter 1, the action alternatives must meet each of the objectives of this EIS. Many objectives were developed for this EIS, including protecting sensitive species and their habitats from the detrimental effects associated with dogs and minimizing conflicts related to dog use by providing a variety of safe, high-quality, visitor use experiences, including areas where dogs are allowed. A complete list of objectives can be found in the "Objectives" section of chapter 1.

During their discussions, the interdisciplinary team grouped the park sites by county (Marin, San Francisco, and San Mateo), which allowed for an informed discussion of strategies and management goals from the countywide level, and, ultimately, for the preferred alternative (alternative F), a more balanced approach in each county.

The entirety of the alternatives development effort, filtered through the specific expertise of the park interdisciplinary team and verified against the purpose and objectives of this planning effort and knowledge of park resources, resulted in the formulation of the alternatives presented in this EIS.

ALTERNATIVE A: NO ACTION (CONTINUATION OF EXISTING MANAGEMENT)

The no-action alternative for the final plan/EIS is based on a combination of NPS regulations, the 2005 federal court decision (*U.S. v. Barley*, 405 F.Supp.2d 1121 (N.D. Cal. 2005)), and public use practices. Because dog walking regulations and policies, including guidelines in the 1979 Pet Policy, are often ignored or not followed by visitors at many park sites, on-the-ground activities sometimes vary widely from posted regulations. These differences are attributable in part to changes in dog walking policies over the years, court decisions regarding dog walking in GGNRA, and public confusion due to those circumstances and variable levels of enforcement. The changing history of dog management is described in "Chapter 1: Purpose and Need for Action" of this final plan/EIS.

The no-action alternative for this final plan/EIS is based on a combination of NPS regulations, the 2005 federal court decision, and public use practices.

CURRENT REGULATIONS AND POLICIES

Dog walking in the park is managed under several legal provisions. Some areas remain closed to dogs or to all public use, or have restrictions imposed by special regulation, the GGNRA Compendium, or consultation under the ESA, which results in a compendium closure or closure by special regulation. Dog walking is authorized in compliance with 36 CFR 1.5, "Visiting Hours, Public Use Limits, and Closures," and 36 CFR 2.15, "Pets." The authority to close or restrict areas to protect resources or public safety, or for a variety of other reasons, derives from 36 CFR 1.5(a), which states, in part, "based upon a determination that such action is necessary for the maintenance of public health and safety, protection of environmental and scenic values, protection of natural and cultural resources, [and] aid to scientific research … the superintendent may … designate areas for a specific use or activity, or impose conditions or restrictions on a use or activity." Such restrictions are to be available in writing, and the reasons for them referenced either in the GGNRA Compendium itself or another document, such as consultation

under ESA. Under 36 CFR 2.15, pets are prohibited in public buildings, public transportation vehicles, or locations designated as a swimming beach, or any structure or area closed to pets by the superintendent. The GGNRA Compendium is updated each year and is available to the public by request or on the park's web site (www.nps.gov/goga).

In addition to these general provisions, dog walking in GGNRA is currently managed in accordance with a 2005 federal court decision (*U.S. v. Barley*, 405 F.Supp.2d 1121 (N.D. Cal. 2005)). This decision preserves dog walking under voice control in those areas covered by the 1979 Pet Policy until the NPS has developed a dog management plan and special regulation pursuant to public notice and comment.

CURRENT COSTS FOR DOG MANAGEMENT

Current total costs for alternative A are estimated at $470,317. The bulk of these costs are associated with the personnel for maintaining the current conditions. For a more detailed explanation of personnel costs under alternative A, see the "Park Operations" section in chapter 4.

STATUS OF CURRENT DOG WALKING ACTIVITIES UNDER ALTERNATIVE A

Below are the park sites considered for dog management, listed in order from north to south, and shown on alternative A maps (see "Maps"). Details on the resource impacts for these sites can be found in the impact analyses in chapter 4.

Marin County Sites (No-action Alternative)

Stinson Beach

On-leash dog walking is allowed only in the parking lot and picnic areas of Stinson Beach. Dogs are not allowed on the beach itself, because it is a designated swimming beach (closed per 36 CFR 2.15). Dog walking under voice control is not allowed.

Homestead Valley

On-leash dog walking or dog walking under voice control is allowed at the entire site.

Alta Trail / Orchard Fire Road / Pacheco Fire Road

On-leash dog walking or dog walking under voice control is allowed from Marin City to Oakwood Valley.

Oakwood Valley

On-leash dog walking or dog walking under voice control is allowed on Oakwood Valley Fire Road and the section of the Oakwood Valley Trail from its junction with the Fire Road to the junction with Alta Trail. On-leash dog walking is allowed on the Oakwood Valley Trail from the trailhead to the junction with the Oakwood Valley Fire Road.

Muir Beach

On-leash dog walking or dog walking under voice control is allowed on the beach. Dogs are prohibited in the lagoon and Redwood Creek per the GGNRA Compendium. On-leash dog walking is allowed on

Kaashi Way from the beach north to the junction with the Coastal Trail, as well as on the boardwalk to the parking lot and on the Muir Beach Trail.

Rodeo Beach / South Rodeo Beach

On-leash dog walking or dog walking under voice control is allowed on Rodeo Beach and South Rodeo Beach. Dogs and visitors are prohibited in Rodeo Lagoon per the GGNRA Compendium.

Marin Headlands Trails

Dog walking on leash or under voice control is allowed on the Coastal Trail from the Golden Gate Bridge to Hill 88 (includes the Lagoon Loop Trail), the Coastal Trail / Wolf Ridge Trail / Miwok Trail Loop, and the Old Bunker Fire Road Loop. On-leash dog walking is allowed on the Coastal Trail from Hill 88 to Muir Beach, the Batteries Loop Trail, North Miwok Trail, and the County View Road, and Marin Drive connectors to the North Miwok Trail.

Fort Baker

On-leash dog walking is allowed in areas not closed to dogs. Areas closed to dogs include the Chapel Trail and the Fort Baker pier. The old roadbed around Vista Point is currently closed to all visitors; however, a trail is expected to be constructed on this alignment in 2014 and would be open to on-leash dog walking.

San Francisco County Sites (No-action Alternative)

Upper and Lower Fort Mason

On-leash dog walking is allowed throughout Upper and Lower Fort Mason, except that dogs are prohibited in the Community Garden in Upper Fort Mason and inside buildings in Upper and Lower Fort Mason. Dog walking under voice control is not allowed, per the 1979 Pet Policy.

Crissy Field

The Crissy Field WPA is defined in 36 CFR 7.97(d), Snowy Plover Protection, as an area "encompassing the shoreline and beach north of the Crissy Field Promenade (excluding the paved parking area, sidewalks and grass lawn of the former Coast Guard Station complex) that stretches east from the Torpedo Wharf to approximately 700 feet east of the former Coast Guard station, and all tidelands and submerged lands to 100 yards offshore." It was later discovered that a measurement error was made on the eastern boundary of the Crissy Field WPA. The correct measurement is approximately 900 feet east of the former Coast Guard Station. The action alternatives (B–F) presented in this final plan/EIS consider the latter, expanded (by 200 feet) definition of the Crissy Field WPA; the former definition will be applied only to existing conditions as described in chapter 3 and alternative A – no-action alternative impact analysis in chapter 4. Dogs are allowed in the Crissy Field WPA under voice control from May 15 to July 1, with a seasonal leash restriction the rest of the year for the protection of the federally threatened western snowy plover (*Charadrius alexandrinus nivosus*) per 36 CFR 7.97(d), "Snowy Plover Protection."

Dog walking on leash or under voice control is allowed on the Promenade (from the east end of East Beach to the Warming Hut), the airfield, East and Central beaches, the trails and grassy areas south of East Beach, and the Mason Street Bike Path. Dogs must be on leash in parking lots and picnic areas per the 1979 Pet Policy.

Fort Point Promenade / Fort Point National Historic Site Trails

On-leash dog walking is allowed outside the historic fort but is prohibited inside the fort or on the Fort Point pier. Areas for on-leash dog walking include the Fort Point Promenade, Battery East Trail, Andrews Road, Presidio Promenade, and grassy area near the parking lot restroom. Dog walking under voice control is not allowed at Fort Point.

Baker Beach and Bluffs to Golden Gate Bridge

Dog walking on leash or under voice control is allowed on the beach north of Lobos Creek. Dogs must be on leash on all trails except on the Batteries to Bluffs Trail, where dogs are prohibited per the GGNRA Compendium for the protection of irreplaceable natural resources.

Fort Miley

Dogs are allowed on leash or under voice control within East and West Fort Miley.

Lands End

Dogs are allowed on leash or under voice control throughout the entire site.

Sutro Heights Park

On-leash dog walking is allowed throughout Sutro Heights Park. Dog walking under voice control is not allowed.

Ocean Beach

Dogs are allowed in the SPPA (Stairwell 21 to Sloat Boulevard) on leash or under voice control from May 15 to July 1, with a seasonal leash restriction the rest of the year for the protection of the federally threatened western snowy plover, per 36 CFR 7.97(d), “Snowy Plover Protection.”

Dog walking on leash or under voice control is allowed north of Stairwell 21 and south of Sloat Boulevard, the sections of the beach that are outside the SPPA. Dog walking on leash is allowed on the Ocean Beach Trail east of the dunes that runs parallel to the Great Highway from the end of the seawall to Sloat Boulevard.

Fort Funston

Dog walking on leash or under voice control is allowed throughout Fort Funston, with several exceptions. The 12-acre habitat protection area is closed to all park visitors and there is an advisory for all park visitors at the base of the northernmost bluffs to protect nesting bank swallows (April 1–August 15). Due to erosion, the trail north of the intersection of the Funston Horse Trail and the Sunset Trail is also closed to all visitors.

San Mateo County Sites (No-action Alternative)

Mori Point

On-leash dog walking is allowed on all trails and on the section of beach within the park boundary at Mori Point. Dog walking under voice control is not allowed.

Milagra Ridge

On-leash dog walking is allowed on all trails at Milagra Ridge. Dog walking under voice control is not allowed.

Sweeney Ridge / Cattle Hill

On-leash dog walking is allowed on all trails at Sweeney Ridge except the Notch Trail, which is closed to dog walking for the protection of mission blue butterfly (*Icaricia icarioides missionensis*) habitat. Dog walking under voice control is not allowed at Sweeney Ridge.

Cattle Hill is not currently owned or managed by GGNRA. The site is owned by the City of Pacifica, although it is not actively managed; dog walking, both on-leash and under voice control, currently occurs at this site. Cattle Hill is within the park boundary and it is anticipated that it will transfer to NPS management in the near future, at which point the servicewide regulation for dog walking (36 CFR 2.15) will apply, and areas may be closed to dog walking to protect resources and visitor experience until sufficient information about this new site is acquired.

Rancho Corral de Tierra

Several elements are common to all of the action alternatives (alternatives B, C, D, and E).

Rancho Corral de Tierra transferred to GGNRA on December 9, 2011, after the draft plan/EIS was released. Like other GGNRA sites acquired after 1979, Rancho was not addressed in the 1979 Pet Policy. Historically, although off-leash dog walking was not officially sanctioned by the previous private owner, off-leash use occurred frequently. Under current NPS management, on-leash dog walking is allowed throughout Rancho Corral de Tierra, while off-leash or voice control dog walking is not allowed. NPS regulations, which take effect when properties are transferred to the NPS, require that pets must be physically confined or restrained on a leash where they are allowed (36 CFR 2.15(a)(2)). This conforms to CEQ guidance implementing NEPA, which defines no action in this case as "an action such as updating a land management plan where ongoing programs initiated under existing legislation and regulations will continue, even as new plans are developed. In these cases 'no action' is 'no change' from current management direction or level of management intensity" (CEQ 1981, Question 3).

ELEMENTS COMMON TO ACTION ALTERNATIVES

Several of the potential actions are common to the action alternatives (alternatives B–F), but are not a part of the no-action alternative. These elements provide overall clarification and detail for the proposed dog management framework at GGNRA. Based on public comment and further evaluation, several items previously discussed as elements considered but dismissed from the analysis in the draft plan/EIS and draft plan/SEIS have been reassessed and are now included in this section. The rationale for adding these elements is that some management options, such as fencing and barriers, present viable options to protect resources, reduce conflict between user groups, and maximize use at GGNRA.

TRAIL UPDATES SINCE THE DRAFT PLAN/SEIS

Some trail, road, and feature names used in the draft plan/SEIS have been changed since its publication in 2013. To maintain consistency, the text of this final plan/EIS uses the same names as those used in the draft plan/SEIS. The figures for alternatives A–E are consistent with those presented in the draft plan/SEIS; however, the figures for alternative F (the preferred alternative) present the updated trail, road, and park feature names with the old names in parentheses. Table 3 identifies the updated names that are

different from those used in the draft plan/SEIS. It is important to note that despite name changes, there would not be any changes in terms of trail character or trail maintenance. Two trails that were discussed in the draft plan/SEIS have since been closed for to safety concerns. The Battery Davis Trail at Fort Funston and the Mori Bluff Trail at Mori Point have both been closed due to erosion issues.

TABLE 3. UPDATED TRAIL, ROAD, AND FEATURE NAMES

Site	Names used in the Draft Plan/SEIS	Names used in this Final Plan/EIS
Stinson	Overflow Parking	South Parking Lot (Overflow)
Stinson	South Parking Lot	Central Parking Lot
Oakwood Valley / Alta Trail	Marincello Fire Road	Marincello Trail
Oakwood Valley / Alta Trail	Oakwood Valley Fire Road	Oakwood Valley Trail
Oakwood Valley / Alta Trail	Oakwood Valley Trail	Oakwood Meadow Trail
Oakwood Valley / Alta Trail	Orchard Fire Road	Orchard Trail
Oakwood Valley / Alta Trail	Pacheco Fire Road	Pacheco Trail
Muir Beach	Kaasi Road	Kaashi Way
Rodeo Beach	N. Lagoon Loop Trail	Lagoon Trail
Rodeo Beach	Old Bunker Fire Road	Coastal Trail
Fort Baker	Chapel Trail	Chapel Steps Trail
Fort Baker	Horseshoe Bay	Horseshoe Cove
Fort Mason	Great Meadow	Great Meadow Picnic Area
Crissy Field	Former Coast Guard Station	Gulf of the Farallones NMS
Fort Point	Andrews Road	Andrews Trail
Fort Point	Presidio Coastal Trail	Coastal Trail
Fort Point	Fort Point Pier	Torpedo Wharf
Fort Point	Promenade	Crissy Field Promenade
Baker Beach	Dune Trail	Presidio Sand Ladder
Lands End / Fort Miley	Old Roadway	West Fort Miley Trail
Lands End / Fort Miley	Steps	Memorial Stairs
Ocean Beach	Ocean Beach Trail	Coastal Trail
Fort Funston	Stairs	John Muir Trail
Fort Funston	Sunset Trail	Coastal Trail
Milagra Ridge	Bunker	Battery #244
Milagra Ridge	Fire Road	Milagra Ridge Road
Milagra Ridge	Milagra Ridge Road	Milagra Ridge Trail
Cattle Hill / Sweeney Ridge	Farallon View Trail	Cattle Hill Trail
Cattle Hill / Sweeney Ridge	Sweeney Ridge Trail	Mori Ridge Trail
Rancho Corral de Tierra	Denniston loop Trail	Farmer's Daughter Trail
Rancho Corral de Tierra	Denniston Ridge Trail	French Trail

Site	Names used in the Draft Plan/SEIS	Names used in this Final Plan/EIS
Rancho Corral de Tierra	Farallon Cutoff	Farallon Trail
Rancho Corral de Tierra	Memorial Loop	Flat Top Trail
Rancho Corral de Tierra	Vincente Ridge Trail	San Vincente Trail

AREAS OPEN TO DOG WALKING

Dog walking would be allowed only in designated VSCAs or on-leash areas; all other areas of the park would be closed to dog walking. Guidelines for VSCAs originated in discussions by the Negotiated Rulemaking Committee for Dog Management at GGNRA and were finalized by NPS staff. Under the action alternatives, voice control within a VSCA would be specifically defined and incorporated into the new special regulation for dog walking at GGNRA. It would be expected that the VSCA guidelines, reinforced by education and outreach efforts, would change the behavior of dog walkers in the future at GGNRA. Complete dog walking requirements are in appendix E and include the following:

- Each off-leash dog must be under voice and sight control at all times, meaning that dogs must be within direct eyesight of the dog walker (i.e., able to see the dog's actions), and that dog walkers must be able to prevent the dog or dogs under their supervision from engaging in uncontrolled behaviors such as charging, chasing, harassing, disturbing, threatening or displaying aggression toward a person, another dog or domesticated livestock or wildlife. A dog guardian or owner must also be able to immediately recall their dog(s) to their side so that a leash can be attached to the dog(s)'s collar, and shall demonstrate this ability when requested to do so by an authorized person.
- Uncontrolled dogs are prohibited. Dogs are presumed not to be under control if they
  - annoy, harass, or attack people, livestock, or other leashed or unleashed dogs,
  - intentionally or unintentionally annoy, pursue, hunt, harass, harm, wound, chase, attack, capture, or kill wildlife,
  - enter leash-required or dog-prohibited areas, and/or
  - dig in soil, sandy dunes, or vegetation, destroy vegetation, or enter fenced or closed areas.
- Aggressive dogs (snarling, unwanted jumping) are not allowed in VSCAs and their dog walkers are subject to fines per 36 CFR 2.34(a)(4).
- Dogs less than four months old must be leashed, crated, or confined in a carrier at all times.
- Dogs in heat are not allowed in VSCAs.
- Dogs must be currently licensed in their county of residence and have proof of a current rabies vaccination; they must either wear an identification tag that includes the name and phone number of the owner, or the dog guardian must have such proof on their person while bringing dog into the park.
- All dog walkers must have a functional 6-foot leash that can be attached to a collar or harness on the dog, for each dog under their care.
- Dog walkers must keep dogs on leash in parking lots and on paths that access VSCAs.
- Dog walkers must keep dogs out of any area closed by a fence or with a sign for restoration, habitat protection, or safety concerns.

- Dog walkers must pick up their dogs' feces immediately and dispose of them in a garbage container. Bagged feces may not be left on the ground.
- VSCAs, or parts thereof, could be periodically closed to allow re-growth of vegetation on an as needed basis.

Additional elements common to all of the action alternatives (B, C, D, E, and F the preferred alternative), are as follows:

- Areas designated for on-leash dog walking require walkers to have full control of their dog(s) by using a functional leash no more than 6 feet long that must be attached to the dog and simultaneously held by the dog walker.
- Each area will be delineated and marked by signs, and landscape design elements may be used. Standard landscape design elements (e.g., vegetative barriers, fencing, signage, landscape contours, paths, etc.) could be installed to aid differentiation of dog walking areas provided that wildlife movement is protected. Landscape design elements may also be utilized to protect restoration areas, delineate areas that require closure or separation for safety purposes, to reduce user conflicts, or to address other dog management needs.
- On-leash dogs would be allowed in all parking lots, picnic areas, and paved public roads (roads open to public vehicular traffic) throughout to provide for visitor and staff safety, except as follows:
  - Alternative B
    - West Fort Miley – no dogs
  - Alternative D
    - Stinson Beach – no dogs in parking lots or picnic areas
    - West Fort Miley – no dogs
    - Crissy Field – no dogs in West Bluff picnic area.
  - Alternative F
    - Stinson Beach – no dogs in South Picnic Area
    - West Fort Miley – no dogs
    - Fort Point – no dogs in West Bluff Picnic Area
    - Baker Beach – no dogs in South Picnic Area
- Dog walking would not be allowed off-trail, in campgrounds, on designated swimming beaches, on informal (i.e., ''social'') trails, in public buildings, or in any area not designated by the final rule as open to dogs.
- Informal trails are not official trails and therefore would be closed to dog walking.
- Dogs would be prohibited in public buildings, including restrooms, and in all internal or external showers, excluding the Crissy Field dog rinse station (also applies to alternative A).
- No more than three dogs may be walked, on leash or in a VSCA, by an individual at any time in any of the GGNRA sites, except under alternatives that allow a permit for up to six dogs in those sites where permitted dog walking is allowed.

- Service animals accompanying a person with a disability, as defined by federal law and Department of Justice regulations (28 CFR § 36.104), are allowed wherever visitors or employees are allowed. Under the Federal Rehabilitation Act (FRA) – Section 504, service animals must be harnessed, leashed, or tethered, unless these devices interfere with the service animal's work or the individual's disability prevents using these devices. In that case, the individual must maintain control of the animal through voice, signal, or other effective controls (U.S. Department of Justice 2010). Currently, use of service animals within NPS areas is managed according to the NPS Director's memorandum on "Use of Service Animals by Persons with Disabilities in the National Park System," dated September 5, 2002. On April 18, 2014, the NPS published a proposed rule in the Federal Register concerning service animals (79 FR 21876). The NPS expects to publish a final rule governing the use of service animals in the near future.

FENCE OR BARRIER CONSTRUCTION

In the draft plan/EIS, fence or barrier construction for trails to allow voice and sight control of dogs was considered but dismissed because fences and barriers may alter the aesthetic landscape and must be of sufficient construction to contain dogs not on leash, which would then hinder or prevent wildlife movement. The only site in the draft plan/EIS where fence construction was considered was on the northern section of the Oakwood Valley Loop Trail, because it was a part of the Negotiated Rulemaking Committee consensus, which the NPS agreed to carry forward for consideration in the alternatives. Following the public comment period on the draft plan/EIS, the action alternatives were revised and at some sites alternatives in the draft plan/SEIS included fencing or natural or vegetative barriers. At Muir Beach, fencing has been installed along the dunes and the lagoon as part of the Lower Redwood Creek Restoration project to protect the natural resources in these areas. The fencing acts as a visible barrier, but does not completely exclude dogs from the area. Fencing would also be strategically placed along the Kaashi Way trail to better protect sensitive species in the area, primarily in areas where thick underbrush would not serve as an effective barrier to dogs. At the sites with VSCAs, fences or other barriers may be needed to protect natural and cultural resources or address potential human health and safety issues. For example, at Fort Funston, a fence or natural barrier to separate the upland VSCA from the adjacent wildlife corridor would be designed that would allow wildlife movement; at Crissy Field, the east and west portions of the Central Beach VSCA would be fenced to protect sensitive habitats; and at Fort Mason, the VSCA would be fenced to protect dogs and handlers from two busy streets. The park would ensure that fencing or barriers used to enclose VSCAs would not prevent the movement of wildlife. During the 2012 visitor satisfaction survey, when respondents were asked how satisfied they would be if areas within GGNRA designated as VSCAs were fenced, nearly 70 percent indicated they would not be satisfied or slightly satisfied. The remaining 30 percent of respondents indicated that they would be moderately satisfied to completely satisfied with fencing around VSCAs (NPS 2012a, 35). A primary goal of fencing or any barriers would be to protect natural resources and/or to maintain separations where there may be user conflicts. Care would be taken to ensure that areas be fenced in a way appropriate to the landscape and uses of the area yet be effective to meet the plan objectives.

PERMITS FOR MORE THAN THREE DOGS – COMMERCIAL AND INDIVIDUAL DOG WALKERS

Commercial dog walking would be allowed under alternatives B, C, E, and F (the preferred alternative). Commercial dog walking would not be allowed under alternative D. Under alternative B, commercial dog walking would be regulated under the same guidelines and regulations that apply to recreational dog walkers, including the three-dog maximum. Because alternative B would not allow for dog walking under voice control, commercial dog walking would be on leash only. Under alternatives C, E, and F, commercial dog walking would be allowed under the same guidelines and regulations that apply to

recreational dog walkers, including walking up to three dogs without a permit. However, under these three alternatives, both commercial and recreational dog walkers could apply for a SUP to walk up to six dogs. In a VSCA, permit holders may have up to six dogs under voice and sight control. Permits would specify the areas, times, and conditions under which walking four to six dogs may occur. Permits would be issued for the following sites: Alta Trail, Rodeo Beach, Fort Baker, Fort Mason, Crissy Field, Baker Beach, and Fort Funston. The hours for commercial dog walking would be limited to 8:00 a.m. to 5:00 p.m. Monday through Friday. Permitted dog walking, or the bringing of four to six dogs into the park, would not be authorized in picnic areas.

The NPS intends to recover the costs of administering the SUP program under 54 USC 103104. In order to obtain a SUP to walk four to six dogs at one time, dog walkers would be required to pay a permit fee to allow the NPS to recover these costs. Director's Order 53 allows a fee to be collected up to but not surpassing the cost of administering the SUP program. For the current interim program, the annual fee is $300 with a one-time administrative fee of $75. The SUP fee could change but would always be in compliance with Director's Order 53 governing special park uses. See appendix F for SUP conditions and enforcement associated with noncompliance with the permit. NPS maintains discretion to alter permit conditions for either recreational dog walkers or commercial dog walkers.

OUTREACH AND EDUCATION

Education and public outreach would be a large component of all the action alternatives. GGNRA would establish a long-term public outreach campaign to help educate and inform the public about the selected alternative and new dog management regulations for the park based on the preferred alternative. The park would develop a comprehensive dog management guide that would be available at visitor centers and on the park's web site. The dog walking guide would contain clear, concise, illustrated explanations of the new dog management regulation by GGNRA site. New regulatory and interpretive signs would be developed for dog walking areas with consistent design and style that is clear and concise so the public can understand the regulations at specific sites. SUPs for large special events will require that the event organizer provide educational materials on the dog walking program during their event. GGNRA would encourage media coverage of the new dog walking regulation and would place ads in community newspapers and dog walking magazines, as funding allows, to help inform the dog walking community of the new regulation. Dog management information would be available at all the park's quarterly open house meetings, allowing the public to talk with park staff about dog management. Park staff and outreach volunteers would provide information to the public about the new dog management regulation. The park would also consider regularly meeting with stakeholder organizations for information sharing on dog management. Summaries of these meetings would be posted on the park web site.

Additionally, GGNRA is re-evaluating its earlier dismissal of the Dog VSCA Certification Program (formerly, Dog ROLA Certification Program). GGNRA originally considered but dismissed this program due to its cost, substantial staff time commitment, and most importantly, program evaluations from another jurisdiction (Boulder Colorado Open Space and Mountain Parks) with a similar program, which showed that the program only minimally raised compliance rates despite the increased costs and staff effort. However, since that time, Boulder County has changed the nature of its educational program to require a classroom, in-person educational training along with increased fees for violations. This has raised the compliance rate slightly. GGNRA has also received extensive public comment from dog groups asking that the program be implemented as an alternative approach to dog walking regulations. While GGNRA does not believe this is a "one-size-fits-all" solution, NPS is no longer dismissing the use of a training certification program for off-leash dog walking, and will use it as a specific primary management response under the monitoring-based management program. Please see the monitoring-based management program section below for more information.

PARTNERSHIPS

The federal panel recommended that dog walking groups be active partners in management of dog walking in the park, including disseminating accurate information to constituents regarding dog management regulations (NPS 2002a, 11). This was also stated in the parameters and scope of the negotiated rulemaking discussion. The NPS would actively seek partnerships with stakeholder groups and members of the public—particularly those who have been involved in the development of GGNRA dog management policies—to help in disseminating dog walking information and guidelines, including VSCA guidelines, to park visitors in order to reduce noncompliance.

Monitoring-based Management Program

Background

The monitoring-based management program (formerly the compliance-based management strategy) has been designed to encourage compliance with sections of the CFR applicable to dog management, and ensure protection of park resources, visitors, and staff. All areas open to dog walking, including VSCAs, would be subject to the monitoring-based management program. It will provide the framework for monitoring and recording observed noncompliance with the applicable sections of the CFR, including the new 36 CFR Part 7 special regulation, and will guide use of park resources to address those violations. Noncompliance with federal regulations related to dog management will be met with a range of management responses. It will also monitor for impacts to natural and cultural resources through monitoring of CFR violations, including behaviors that meet the definition of an uncontrolled or unattended dog, dogs in prohibited areas, and off-leash dogs in areas where leashes, or being crated or confined in a carrier, are required.

Changes Based on Public Comment

GGNRA received multiple public comments regarding the monitoring-based management program (formerly the compliance-based management strategy). Some of those are addressed in specific detail in the response to comments on the draft plan/EIS (found on the NPS Planning, Environment, and Public Comment (PEPC) website (http://parkplanning.nps.gov/projectHome.cfm?projectID=11759). Broadly speaking, concerns included the following:

- Comment: Various changes to weighting options for measuring compliance.

  Response: see responses to see specific comment on the PEPC website (http://parkplanning.nps.gov/projectHome.cfm?projectID=11759), including responses to "Save Our Seashore."

- Comment: Specific recommendations were provided by commenters to make the strategy more similar to adaptive management (monitoring for resource impacts, not just regulation violations).

  Response: Impacts to resources will be monitored as part of the monitoring-based management program.

- Comment: Include a citizen recreation deliberative body to be consulted before an area is changed to the next most restrictive level of dog management.

  Response: This suggestion will not be implemented because areas will no longer change automatically upon reaching a pre-established threshold. Additionally, it would be contrary to the Federal Advisory Committee Act.

- Comment: Repeat individual violators should not count towards the overall total, but should instead be dealt with on an individual basis.

  Response: The revised monitoring-based management program alone will not restrict or close an area based on a preset number of violations. Rather, individual violations will be one of many factors evaluated to determine what, if any, management actions are needed to improve compliance depending on the severity of impacts.

- Comment: Open up more areas to dog walking, then reduce as needed based on monitoring data. And, if an area is changed to a more restrictive status, allow it to open again at some point in the future.

  Response: The dog management plan's range of alternatives sets the maximum allowance for areas open to dog walking while still meeting the purpose and need for the plan.

- Comment: Provide additional examples of education and outreach.

  Response: Education and outreach is not limited by the examples provided in the plan, but rather by staffing and budget constraints. GGNRA recognizes that education and outreach can be a cost-effective and effectual way of managing dog walking, and intends to focus on these methods as much as possible, particularly through collaboration with other organizations. NPS has also added a training certification program as an additional example of the type of education that could be implemented for off-leash areas.

- Comment: Define buffer zones.

  Response: A buffer zone is an area off set to provide increased protection for sensitive habitat and species, or provide separation between distinct user groups, which may include fencing or informal barriers or markers to designate the area.

The monitoring-based management program will no longer serve as a strict measurement of compliance that could trigger an automatic change in use in an area or zone. Although simplicity and ease of measurement supported a uniform measurement and threshold, the numbers and types of visitor uses and range of resources varies widely at different sites. Given these differing contexts, uniform application of a 75 percent threshold and uniform weighting of violations could lead to divergent outcomes with less than uniform protection of NPS resources and values. For example, based on visitation data, a 75 percent threshold could trigger restrictions in some areas by only one hundred violations, while other sites might require several thousand violations before a change was implemented, despite greater impacts to resources and values in the latter case.

This change will also allow NPS to weigh violations within the context of a particular area and resource context. For example, disturbance of threatened and endangered species and habitat would be a high priority for management to address immediately if approaching an unacceptable level. This information will guide the park in the future in its management actions if, for example, additional, future closures are necessary. Law enforcement will continue to issue citations for individual violations, whether or not counted as part of the monitoring-based management program. Additionally, monitoring data will also provide law enforcement with information on where to prioritize these efforts.

Timeline

Upon plan and final rule implementation, a detailed monitoring plan will be developed to guide compliance monitoring, data management, and reporting. Once development of the monitoring plan is complete, monitoring efforts will be initiated.

All areas and zones (see frequently asked questions 1 below) addressed by the dog management plan will be subject to monitoring. The monitoring data to be collected could include the numbers and rates of visitors with and without dogs, numbers of dogs per visitor, type of use (on leash or voice control), and noncompliance with regulations (including noncompliance observed but not resulting in citations). Dog management monitoring will continue in all areas for at least 4–5 years. Following this initial monitoring, NPS will review the data and identify areas that require continued monitoring. Areas addressed in the dog management plan will be periodically monitored for changes to reprioritize monitoring as needed. Park management responses will focus on areas with demonstrated noncompliance with the regulations and concurrent impacts to resources not otherwise captured. Monitoring will inform park management and law enforcement when, where, and how to prioritize responses to noncompliance.

NPS will prepare summary reports documenting monitoring data and findings which will be made available to the public.

Below are examples of federal regulations that will be monitored for compliance:

- Vegetation damage: 36 CFR 2.1 (a) (1) (ii)
- Wildlife disturbance: 36 CFR 2.2(a)(2)
- Disturbance to threatened and endangered species: 36 CFR 2.2 (a) (2), 50 CFR Part 17
- Violation of areas closed to dogs (threatened and endangered species and sensitive habitat): New Part 7 Special Regulation or 36 CFR 2.15
- Violation of areas closed to all (threatened and endangered species and sensitive habitat): 36 CFR 1.5 (f) or 36 CFR 2.15
- Violation of areas closed to dogs (safety): 36 CFR 1.5 (f), New Part 7 Special Regulation or 36 CFR 2.15
- Hazardous condition (aggressive behavior, pet rescues): 36 CFR 2.34 (a)
- Degree of compliance with special regulation (no dogs, on leash, VSCA): New 36 CFR Part 7 Special Regulation or 36 CFR 2.15
- Government property damage: 36 CFR 2.31 (a) (3)
- Pet excrement: 36 CFR 2.15 (a) (5).

Triggers and Management Responses

Primary management response: Primary management responses will be implemented when the level of compliance is approaching an unacceptable level based on the number or type of violations and/or impacts to resources and/or other visitors. Primary management responses may include focused enforcement of regulations, proposed fine increases, increased outreach and education, a specific training certification program with dog tags for anyone walking or bringing off-leash dogs into the park, time of use restrictions, establishment of buffer zones, fencing, barriers or separations, and SUP restrictions.

- Areas with the most critical resources and potential for resource and/or visitor impacts will receive priority for management actions to avoid approaching and unacceptable impact. [1]

[1] If Section 7 consultation pursuant to the ESA requires preparation of a Biological Opinion, management responses related to threatened and endangered species will be governed by the terms and conditions described in the Biological Opinion, and would be separate from outside of the monitoring-based management program.

- Aggressive dogs or unsafe behavior (e.g., resulting in cliff rescues) while treated on an individual, case-by-case basis may result in banning a particular dog from the park; or, if applicable and recurring, an SUP restriction. Violations recorded by the monitoring team will count towards the rate of noncompliance.

Education and public outreach would be a primary management response: As detailed in the "Alternative Elements Eliminated from Further Consideration" section, the City of Boulder implemented a voice and sight tag program as a means to allow people to walk their dogs off leash. The program, as initiated in 2007, was not effective in increasing compliance with regulations for off-leash dogs and was therefore not considered as a management action for GGNRA. However, in 2014, the City of Boulder modified the educational aspects of their tag program and instituted increased fines for noncompliance. Although overall compliance has not increased substantially, some aspects did improve. Since the changes were implemented, overall compliance with the voice and sight tag program was at 67 percent. In prior years, overall compliance ranged from 56 to 66 percent, indicating that compliance is better or at least no worse than in previous years (VanderWoude and Bitume 2015, 15). Compliance with the excrement removal requirement has improved since implementation of the program. In 2006, prior to the tag program, compliance with pick up and removal of pet excrement was 62 percent. Following implementation of the earlier program, compliance dropped to 41–44 percent (2007 and 2010). However, in 2014, compliance rose to 70 percent (VanderWoude and Bitume 2015, 22) with increased educational requirements for users of their off-leash program. The 2011 monitoring study also found that the incidence of conflictive behaviors in 2010 returned to the 2006 pre-program level, suggesting that the earlier program was not effective in decreasing conflict involving dogs on Open Space and Mountain Parks properties (City of Boulder 2011, 10 and 17). Conflicts involving dogs were not recorded for the 2015 monitoring report. The 2014 changes to Boulder's tag program require dog owners to attend a class that educates potential participants on the expectations for voice and sight control. The registration must be renewed yearly and participants are required to complete an online refresher course at least every 5 years (City of Boulder 2016). Initial indications are that this is improving the rate of compliance with off-leash regulations and is worth considering for GGNRA as a management action, pending Boulder's final program evaluation.

Secondary management response: Secondary management responses will be implemented when primary management actions do not adequately improve compliance or address impacts of concern. Secondary management responses may include additional training certification program elements required for use of VSCAs, limiting the number of dogs off-leash at any one time, short- or long-term closures to dog walking areas, and/or increases in expansion of buffer zones or implementation of other landscape design solutions that include the adjustment of defined VSCAs. A short-term closure is a closure contained in the GGNRA Compendium, typically less than 1–2 years in length. A long-term closure is typically longer than 1–2 years in length, and would likely require a special regulation. Long-term closures could be reopened in the future. Note that primary management responses may continue to apply. The NPS will evaluate whether to propose secondary management responses if compliance rates are approaching unacceptable based on annual monitoring data in one area, at a minimum.

Frequently Asked Questions

1. What is an area versus a zone?

   An area is a specific geographic site. The dog management plan addresses 22 areas. A zone (also described in the rule as a site) denotes a type of use allowed in an area (on leash, voice control, or no dogs). An area may have more than one zone, depending on the alternative.

2. Will the monitoring plan be peer-reviewed before implementation?

Yes, the plan will be subject to peer review, as required by U.S. Department of the Interior policy to ensure integrity of scientific data. Such a review will include monitoring protocols to ensure statistical rigor and accuracy, and training of monitoring staff to ensure uniform measurement and interpretation of data. There will also be opportunities for public engagement in each county on the monitoring program.

3. How do law enforcement citations or other instances of noncompliance, such as a case incident reports, factor into management responses?

   Although violations will likely occur that are not documented by the monitoring team, including those resulting in law enforcement citations, those would not be included in count towards the cumulative total for the monitoring program in a particular zone, because the number of incidents of noncompliance at any zone would be measured against the total number of dogs and/or dog walkers in the area during monitoring. However, all violations reported to the park, including citations, provide additional information that may be used as data to further inform management about compliance or to inform the monitoring team as to where to focus part of its efforts.

4. Does baseline information factor into management responses?

   No. Baseline information is used to prioritize monitoring initially, and reevaluate monitoring if use patterns change. It does not set a standard for measurement other than documenting initial condition the park wants to improve upon.

5. What kind of public notice will be provided before initiation of a secondary management response?

   Please see the section "Changes to Plan Implementation" in this chapter for details on public notice.

6. Why is the secondary management response necessary?

   The dog management final plan/EIS and the resulting special regulation, along with existing regulations applicable to dog management, determine appropriate behavior for visitors with dogs within GGNRA. NPS does not condone any level of noncompliance, and the primary management response detailed above is sufficient to address noncompliance where it is not widespread. The secondary management response is meant to apply when it is clear that park management has been unable to reduce noncompliance through conventional means, and when there is continued and widespread noncompliance occurring over a longer period of time, at which point the benefits in allowing the use is outweighed by the NPS administrative burden required to manage the use, draining limited resources needed for other important park programs. The secondary management response provides visitors with dogs an additional incentive to comply with the dog regulations, and because it is site-specific, it encourages a communal response to address noncompliance. It also places a burden on NPS to take an initial, proactive approach to dog management by addressing individual violators and by increasing public awareness through community education and outreach, and not punish the majority for individual or isolated violations. At the same time, this secondary response is intended to ensure that NPS does not allow activities that do not comply with its primary conservation mandate, or that are approaching unacceptable impacts. It recognizes that NPS has multiple competing priorities to address with its funding and does not have unlimited resources with which to ensure compliance with dog regulations.

CHANGES TO PLAN IMPLEMENTATION

The park is a dynamic ecosystem, and in this context, the NPS will continually seek to ensure the safety of visitors and staff and the protection of park resources. Both minor and major changes to plan implementation may be required throughout the life of the plan as a result of changing conditions or new information. Minor and major changes could also occur as a result of the monitoring-based management program.

Minor changes to the manner in which the plan is implemented could be required for a number of reasons including a change in resource conditions (e.g., coastal erosion, storm damage, sensitive species moving into an area, creek channel migration, habitat expansion or restoration), health and safety concerns, temporary or limited closures of areas related to park management needs, infrastructure projects, or as a result of the monitoring-based management program.

Minor changes would likely be temporary, or if permanent, likely result in only small adjustments to the plan. Primary management responses under the monitoring-based management program are likely minor changes. Secondary management actions not resulting in substantial geographic changes are also likely minor in nature. Proposed minor changes would be evaluated to determine if additional NEPA compliance is required. Rulemaking under the Administrative Procedure Act most likely would not be required for minor changes, however public notice pursuant to 36 CFR 1.7 will be provided.

Major changes to plan implementation may also be required throughout the life of the plan. A change would most likely be considered major if it results in substantial changes to the dog management program. For example, a substantial geographic change in areas where dogs are allowed is likely a major change. Proposed major changes will be evaluated to determine the appropriate level of NEPA compliance that is needed before the proposed change could occur. The NPS will also evaluate whether additional rule making would be required under the Administrative Procedure Act.

The NPS may also need to make adjustments to the plan in response to emergency situations. As part of its response to emergency situations, the NPS will follow guidance from the CEQ on how to apply NEPA in emergency situations. Once the emergency is abated and if the emergency results in long-term, major changes to the plan, the NPS will also assess whether any amendments to the rule would be required.

ALTERNATIVE B: NPS LEASH REGULATION (36 CFR 2.15 AND GOLDEN GATE NATIONAL RECREATION AREA COMPENDIUM)

Alternative B reflects the NPS-wide approach to dog walking as defined in NPS policy and regulations.

Alternative B reflects the NPS-wide approach to dog walking as defined in NPS policy and regulations. Management conditions for alternative B are regulated by the CFR, specifically 36 CFR 2.15(a)(2), and the GGNRA Compendium. This alternative does not include the voice control provisions of the 1979 Pet Policy. The federal regulation 36 CFR 2.15(a)(2) prohibits failing to crate, cage, restrain on a leash, which shall not exceed 6 feet in length, or otherwise physically confine a pet at all times in national parks (appendix D). The compendium is the format wherein each park, as allowed by the CFR, can publish park-specific actions to establish closures and public use limits to protect cultural or natural resources, enhance public health or safety, or manage public use and recreation (NPS 2012b; appendix B).

Some areas of the park would be closed to dogs or to all public use, or have restrictions imposed on them by the GGNRA Compendium or consultation under the ESA. Section 1.5, “Visiting Hours, Public Use

Limits, and Closures," and Section 2.15, "Pets," are the sections of the compendium that establish site closures in the park for visitors and restrictions for pets. Section 2.15 of 36 CFR states that pets are prohibited in public buildings, public transportation vehicles, locations designated as swimming beaches, or any structure or area closed to pets by the superintendent. The authority to close or restrict areas to protect resources or public safety, or for a variety of other reasons, derives from 36 CFR 1.5, which states in part, "based upon a determination that such action is necessary for the maintenance of public health and safety, protection of environmental or scenic values, protection of natural or cultural resources, [or] aid to scientific research … the superintendent may … designate areas for a specific use or activity, or impose conditions or restrictions on a use or activity." Such restrictions are to be available in the GGNRA Compendium, and the reasons for them referenced either in the compendium itself or the separate written determination as to why the restriction or use limit is necessary. In addition, the public must be notified of closures and use limits put in place through the compendium by signs or brochures as stated in 36 CFR 1.7(a).

The compendium is updated each year and is available to the public by request and on the park's web site. These restrictions are intended to reduce any possible conflict between users, to protect natural, cultural, and archeological resources, and for public safety concerns (NPS 2008b, p. 23).

In the GGNRA Compendium, some areas of the park are designated as closures due to public safety concerns (e.g., steep coastal cliffs) and other areas have natural and cultural resources that are highly sensitive to damage. The ESA and NPS policy require special protection for the threatened and endangered species and the anadromous fish (fish living mostly in the ocean and breeding in freshwater) found in areas of GGNRA. Some park areas provide vital protection of habitat for the state threatened bank swallow and federally threatened western snowy plover as well as habitat for shorebirds, marine mammals, and other sea life. Restrictions on pets in these areas provide important areas of reduced disturbance for resting and feeding waterbirds, shorebirds, and other marine wildlife. Some vegetated areas of the park contain significant native plant communities that are subject to human-induced impacts, like the coastal bluffs and dunes of Fort Funston. Other vegetated areas contain native and/or culturally significant vegetation that is susceptible to erosion due to environmental factors but is also exacerbated as a result of trampling, short-cutting and off-trail travel.

In addition, the GGNRA Compendium could include restrictions for pets in areas of the park for public health and safety, protection of cultural resources, and avoidance of conflict among visitor use activities.

In all sites allowing dog walking in this alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person without a permit. All dogs would be required to be on a leash.

COST OF IMPLEMENTATION

The total costs of implementing alternative B are estimated at $2,567,319. The bulk of these costs are associated with the hiring of additional personnel for implementing the dog management plan. For a more detailed explanation of personnel costs under alternative B, see the "Park Operations" section in chapter 4.

DOG WALKING ACTIVITIES PROPOSED UNDER ALTERNATIVE B

Detailed information on alternative B for individual park sites, listed in order from north to south, is presented below and shown on alternative B maps (see "Maps"). The following rationale for the alternative options for each site describes resource impacts from dog walking in a generalized way. Details of these resource impacts can be found in the impact analyses in chapter 4.

Marin County Sites (Alternative B)

Stinson Beach

As in alternative A, on-leash dog walking would be allowed only in the parking lot and picnic areas of Stinson Beach. Dogs would not be allowed on the beach itself, because it is a designated swimming beach (closed to dogs, per the CFR). Leashed dogs in the parking lot and picnic areas would minimize conflict with visitors in these areas. In addition, leashed dogs would also reduce the concern for health and safety issues associated with dogs in the picnic areas.

Homestead Valley

This alternative would allow on-leash dog walking only on Homestead Fire Road and on neighborhood connector trails (Homestead Trail and Homestead Summit Trail) that will be designated by the park in the future. Homestead Valley is regularly used by local residents. This alternative would provide neighborhood connections for dog walkers. Requiring that pets be walked on leash would protect native plant communities, wildlife habitat, and the federally listed northern spotted owl (*Strix occidentalis caurina*).

Alta Trail / Orchard Fire Road / Pacheco Fire Road

On-leash dog walking would be allowed on Alta Trail up to the junction with Orchard Fire Road and on Pacheco and Orchard Fire roads, which branch off Alta Trail and connect to Marin City. The on-leash designation requires that pets be walked on leash, thereby protecting native plant communities and wildlife habitat—and specifically protecting habitat for the federally listed mission blue butterfly, which is consistent with the treatment of mission blue butterfly habitat throughout GGNRA. The on-leash designation would also limit the potential for dog/coyote interaction.

Oakwood Valley

On-leash dog walking would be allowed only on Oakwood Valley Fire Road and on Oakwood Valley Trail to the junction with the Oakwood Valley Fire Road. This alternative would provide protection for contiguous habitat beyond the trail and fire road junction and would limit the potential for dog/coyote interaction. Contiguous habitat is defined as habitat that is suitable to support the life needs of a species that is distributed continuously or nearly continuously across the landscape (Fischenich 1999). It would also provide protection for potential habitat for species of concern, such as the mission blue butterfly habitat nearby and possible habitat for the northern spotted owl.

Contiguous habitat is defined as habitat that is suitable to support the life needs of a species that is distributed continuously or nearly continuously across the landscape.

Muir Beach

On-leash dog walking would be allowed on the beach, the boardwalk, Muir Beach Trail, and Kaashi Way between the beach and Muir Beach Trail. Requiring that pets be leashed would protect federally listed coho salmon and steelhead in Redwood Creek, as well as sensitive wetland, riparian, and dune habitat. This designation would also allow for a variety of visitor experiences on this beach.

Rodeo Beach / South Rodeo Beach

On-leash dog walking would be allowed on both Rodeo Beach and South Rodeo Beach, and on the S. Rodeo Beach access trail and the footbridge to the main beach. Dogs and visitors are prohibited in Rodeo Lagoon per the GGNRA Compendium to protect the federally listed tidewater goby and California brown pelican, as well as waterbirds and shorebirds that use the lagoon. On-leash dogs would be allowed on the beach because this area has a low incidence of dog/visitor conflicts. Fenced areas (existing or future) are closed to the public to protect dunes, sensitive habitats/species, restoration areas, or other sensitive resources.

Marin Headlands Trails

This alternative would not allow dogs on any of the trails in the Marin Headlands, including those previously open to dogs. This restriction would protect resources by maintaining the integrity of the native plant communities and wildlife habitat, including habitat for the federally listed mission blue butterfly.

Fort Baker

On-leash dog walking would be allowed on Drown Fire Road, the Bay Trail (excluding the Battery Yates Loop), the trail to be built around Vista Point that will connect with the Bay Trail, the Lodge and Conference Center grounds and the parade ground. This restriction would be for visitor protection in an area of increasing visitation, both around the lodge and conference center and along the waterfront. The restriction would also be for the protection of the mission blue butterfly habitat surrounding the area. The Chapel Trail, which is adjacent to mission blue butterfly habitat, is closed to dogs per the GGNRA Compendium.

San Francisco County Sites (Alternative B)

Upper and Lower Fort Mason

On-leash dog walking would be allowed throughout Upper Fort Mason, including the Great Meadow, the vendor area, Laguna Green, lawns, sidewalks, trails, open areas around housing, and the parade ground. However, dogs would be excluded from the Community Gardens. On-leash dog walking would also be allowed at Lower Fort Mason, except that dogs are not allowed in public buildings. Requiring on-leash dog walking is for visitor safety, since this is a multiple-use area (picnicking, sunbathing, walking, running, and bike riding). Rescues of dogs and people have occasionally occurred on the cliffs on the northern edge of Fort Mason.

Crissy Field

Wildlife Protection Area (Torpedo Wharf to approximately 900 feet east of the pier at the former Coast Guard station). No dogs would be allowed in the Crissy Field WPA under this alternative. The federally threatened western snowy plover has been observed in the WPA at Crissy Field during the non-breeding season since 2006. Prohibiting dogs in the WPA would be consistent with the Crissy Field Recovery Plan Environmental Assessment (EA) (NPS 1996) and the General Management Plan Amendment (GMPA) EIS for the Presidio of San Francisco (NPS 1994). This alternative would afford the maximum protection for the western snowy plover, marine mammals (including immature elephant seals, which have been using the area recently), other wildlife, and native dune habitat.

Crissy Field Promenade, Airfield, Beaches, Trails, and Grassy Areas. On-leash dog walking would be allowed on the promenade, airfield, East and Central beaches, the paths leading to Central Beach, the trails and grassy areas near East Beach, the Mason Street Bike Path, and within the grassy areas near the old Coast Guard station. The leash requirement would provide visitor and pet safety as well as visitor satisfaction for those who would prefer to visit this site without encountering off-leash dogs. The leash requirement would also reduce the potential for dog/visitor conflict in this heavily visited, multiple-use area. Crissy Field receives intense visitor use, including from individual and commercial dog walkers. Staff estimates that there are generally ten to fifteen commercial dog walkers per day (fewer on weekends than weekdays), and typically at least three present, with at least four to six dogs each, at any given time of the day. These dogs are often walked under voice control, as are many of the dogs walked by individual dog owners. The area is busy with a variety of visitors, including joggers, cyclists, pedestrians, kiteboarders, windsurfers, and rollerbladers. Particularly on nice days, the high level and variety of visitor uses have resulted in conflicts, including visitor intimidation, dogs knocking people over, dog-on-dog fights, and dogs biting people.

Fort Point Promenade / Fort Point National Historic Site Trails

As in alternative A, on-leash dog walking would be allowed only outside the fort (Fort Point Promenade, Battery East Trail, Andrews Road, Presidio Promenade, and the grassy area near the parking lot restroom) and would be prohibited inside the historic fort or on the Fort Point pier. This would minimize conflicts on the promenade along the entrance road and on the trails near the Golden Gate Bridge, where joggers, cyclists, and walkers share space with dog walking visitors. In addition, this alternative's requirement for on-leash use reduces risks to dogs from the adjacent roadways (Marine Drive and Lincoln Boulevard) and the edge of the seawall.

Baker Beach and Bluffs to Golden Gate Bridge

On-leash dog walking would be allowed on Baker Beach and on all trails except on the Batteries to Bluffs Trail and Battery Crosby Trail, where dogs would be prohibited per the GGNRA Compendium for the protection of irreplaceable natural resources. Requiring on-leash dog walking on the beach and trails would provide protection for shorebirds, sensitive serpentine bluffs, and rare plant habitat as well as for visitors.

Fort Miley

No dogs would be allowed at either East or West Fort Miley under this alternative, due to conflicting uses such as picnicking and bird watching. At West Fort Miley, dogs would not be allowed in picnic areas as there is no dog walking access. This alternative would provide the most protection for bird habitat. Due to the concrete bunkers edged by steep embankments at both East and West Fort Miley and the location of the Veteran's Administration (VA) hospital directly adjacent to the site, safety is a concern at this location. Hospital patients use the area, and the site is typically subject to heavy pedestrian and vehicular traffic, which also cause safety concerns.

Lands End

On-leash dog walking would be allowed only on the El Camino del Mar Trail and Lands End Coastal Trail and connecting trails and steps. On-leash dog walking would increase visitor safety on the heavily used, FRA accessible, restored section of the Lands End Coastal Trail. Resources in this area that are potentially subject to impacts by dogs include natural seeps, migratory birds, and coyotes. A visitor center, the Lands End Lookout, was recently completed at the Merrie Way parking lot in the Lands End area, which has increased use of this area.

Sutro Heights Park

On-leash dog walking would be allowed only on the paths and parapet of Sutro Heights Park. This restriction is needed because this area is a multiple-use area. The park has formal landscaping and is frequently used for special events, including weddings.

Ocean Beach

Snowy Plover Protection Area (SPPA) (Stairwell 21 to Sloat Boulevard). Dogs would be prohibited in the SPPA, but would be allowed on leash on the Ocean Beach Trail east of the dunes, adjacent to Great Highway. The Ocean Beach SPPA was established to protect western snowy plovers when they are present on the beach during their nonbreeding season. Prohibiting dog walking in the SPPA and having on-leash dog walking only along the adjacent trail would provide protection for the western snowy plover consistent with the *Recovery Plan for the Pacific Coast Population of the Western Snowy Plover* (USFWS 2007a). In addition, there are multiple reported instances of dogs flushing or chasing shorebirds or plovers in this area. This alternative would allow on-leash dog walking adjacent to the beach while protecting plover and shorebird habitat by separating the dogs from the habitat.

North of Stairwell 21 and South of Sloat Blvd. Outside the SPPA, on-leash dog walking would be allowed north of Stairwell 21 and south of Sloat Boulevard. Having on-leash dog walking north of Stairwell 21 would reduce conflicts between dogs and visitors in this heavily visited area, which is located close to the parking area at the beach. Requiring on-leash dog walking south of Sloat Boulevard would provide protection for shorebirds in this southernmost section of Ocean Beach, which averages the highest density of shorebirds at Ocean Beach (Beach Watch 2006, 10).

Fort Funston

On-leash dog walking would be allowed on the beach and on trails that are not closed to dogs. A strip of beach at the foot of the northernmost bluffs would also have a seasonal advisory to visitors and dogs when the state-threatened bank swallows are nesting (April 1–August 15). The advisory and the requirement for on-leash dog walking on the beach are for the protection of bank swallows and shorebirds, but also reduce the possibility of conflict between user groups. Requiring on-leash dog walking on the trails south of the main parking lot is for the protection of a large restored area at Fort Funston and would provide increased opportunities to restore coastal dune and bluff habitat and allow for the reintroduction of San Francisco lessingia. The on-leash dog walking requirement would also reduce possible disturbance or safety concerns for the school programs of the San Francisco Unified School District, the NPS Maintenance facility, and site maintenance operations, and would increase visitor safety, particularly in the area used for take-off and landing by hang gliders.

Requiring on-leash dog walking on the trails north of the main parking lot, an area with a high incidence of dog/human technical cliff rescues, reduces risks to dogs and dog owners due to the hazardous cliffs. The leash requirement also provides protection for the restored habitat area and for Battery Davis, a historic battery built in 1936, as well as visitor safety, and minimizes the possibility of conflict between visitors. The Funston Horse Trail is closed to dogs to protect the habitat corridor and reduce visitor conflicts.

San Mateo County Sites (Alternative B)

Mori Point

On-leash dog walking would be allowed only on the Mori Coastal Trail and the beach area within the park boundary at Mori Point, which would be consistent with the City of Pacifica regulations for the levee area and the beach. This alternative would minimize disturbance and damage to restored ponds that provide habitat for federally listed endangered species California red-legged frog and San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) and would allow visitors the opportunity to experience the area without potential disturbance from the presence of dogs.

Milagra Ridge

On-leash dog walking would be allowed only on the Fire Road, the trail to the overlook and World War (WW) II bunker, and the Milagra Battery Trail (to be built - future connector to lower Milagra). Allowing on-leash dog walking on some, but not all, trails at Milagra Ridge would allow visitors to experience the site with or without dogs. Dogs would not be allowed on the unpaved, hiking-only trail, which would provide a no-dog experience for visitors. This alternative would provide protection for federally endangered species (mission blue butterfly, San Bruno elfin butterfly (*Incisalia mossii bayensis*), and California red-legged frog) and their habitats that exist at Milagra Ridge and is consistent with GGNRA's parkwide management of mission blue butterfly habitat areas. Milagra Ridge is an island of habitat in a fragmented landscape; therefore, it is important to minimize further impacts to this area.

Sweeney Ridge / Cattle Hill

No dogs would be allowed at Sweeney Ridge or Cattle Hill under this alternative. This area has mission blue butterfly habitat as well as a large area of relatively undisturbed, contiguous native habitat. This alternative is consistent with regulations of adjacent lands managed by the San Francisco Public Utility Commission. Intensive restoration efforts have occurred at Cattle Hill, including soil erosion mitigation and trail development, in partnership with the City of Pacifica.

Rancho Corral de Tierra

In alternative B, on-leash dog walking would be allowed on designated trails within two areas near Montara and El Granada, which were identified by the local dog walking group as key areas for this use. On-leash dog walking on designated trails in these two areas would allow direct access for this use by the community and other visitors, while protecting habitat in the more remote sections of the Rancho site which are contiguous with surrounding, protected open space managed by other agencies. Allowing on-leash dog walking in these two specific, clearly defined areas would also provide a no-dog experience on other trails at the site, and would be easily communicated to visitors.

ALTERNATIVE C: EMPHASIS ON MULTIPLE USE – BALANCED BY COUNTY

This alternative balances a variety of dog walking opportunities with areas where dogs are not allowed within each of the three counties containing park sites (Marin, San Francisco, and San Mateo), and contains the consensus agreement for the Oakwood Valley site resulting from the negotiated rulemaking process. Details of the Negotiated Rulemaking Committee consensus are provided in chapter 1.

Alternative C balances a variety of dog walking opportunities with areas where dogs are not allowed, and contains the consensus agreement for the Oakwood Valley site resulting from the negotiated rulemaking process.

Alternative C would emphasize recreational opportunities and experiences for multiple user groups, including dog walkers, while considering visitor and dog safety and minimizing conflict between dog walkers and other visitors. The alternative would provide a no-dog experience for visitors to some sites within GGNRA and protection for significant cultural and natural resources.

Alternative C, like alternatives D and E, would include some VSCAs, where users would have to adhere to specific guidelines initiated by the Negotiated Rulemaking Committee and finalized by NPS staff (appendix E).

Alternative C would allow all dog walkers, including commercial dog walkers, to walk one to three dogs without requiring a permit. Any dog walker, private or commercial, could obtain a permit to walk more than three dogs, to a maximum of six dogs. See appendix F for details on the SUP conditions. All dogs are required to be on a leash where they are allowed, unless in a designated VSCA where they are allowed under voice and sight control. Permits may restrict use based on time and location. Permitted dog walking would not be authorized in picnic areas. Permits would be issued for Alta Trail, Rodeo Beach, Fort Baker, Fort Mason, Crissy Field, Baker Beach, and Fort Funston.

COST OF IMPLEMENTATION

The total costs of implementing alternative C are estimated at $2,587,193. The bulk of these costs are associated with the hiring of additional personnel for implementing the dog management plan. For a more detailed explanation of personnel costs under alternative C, see the “Park Operations” section in chapter 4.

DOG WALKING ACTIVITIES PROPOSED UNDER ALTERNATIVE C

The following rationale for the alternative options for each site describes resource impacts from dog walking in a generalized way. Details on these resource impacts can be found in the impact analyses in chapter 4. Below is a description of alternative C for each park site, listed in order from north to south, and shown on alternative C maps (see “Maps”).

Marin County Sites (Alternative C)

Stinson Beach

Alternative C for Stinson Beach would be the same as alternative A (on-leash dog walking).

Homestead Valley

Alternative C for Homestead Valley would be the same as alternative B (on-leash dog walking).

Alta Trail / Orchard Fire Road / Pacheco Fire Road

Alternative C for Alta Trail and Orchard and Pacheco fire roads would be the same as alternative B (on-leash dog walking).

Oakwood Valley

Dog walking under voice and sight control would be allowed within a gated and fenced VSCA on the Oakwood Valley Fire Road that would extend from Tennessee Valley Road to the junction with the Oakwood Valley Trail. The concept of VSCAs on trails was dismissed from consideration in the action alternatives. However, the VSCA on the Oakwood Valley Fire Road is being considered because it was a consensus agreement of the Negotiated Rulemaking Committee. On-leash dog walking would be allowed on the Oakwood Valley Trail only from the junction of Oakwood Valley Fire Road to a new gate that would be installed at the top of the Oakwood Valley Trail at the junction with Alta Trail.

The consensus agreement of the Negotiated Rulemaking Committee stipulated that double gates at each end of the VSCA and continuous fencing along the road would be required to reduce impacts to sensitive habitat. Fencing would also reduce the potential for disturbance and possible interactions among dogs under voice and sight control and wildlife in the area. Interactions between dogs under voice and sight control can endanger both animals and visitors. This alternative also protects potential habitat for species of special concern, including nearby mission blue butterfly habitat and possible habitat for the northern spotted owl.

Muir Beach

Alternative C for Muir Beach would be the same as alternative B (on-leash dog walking).

Rodeo Beach / South Rodeo Beach

Dog walking under voice and sight control would be allowed within a VSCA at Rodeo Beach, bounded on the inland edge by the proposed fence (to be installed as part of a separate park project) along the western edge of Rodeo Lagoon and by the bluff to the south. The Rodeo Beach VSCA would allow dogs to be under voice and sight control in an area that historically has had relatively few conflicts between dog walkers and other users. Rodeo Beach is not heavily used by migrating and wintering shorebirds, so disturbance from chasing by dogs would be expected to be minimal. By limiting the VSCA to only widest portion of the main beach, alternative C also would provide for the protection of South Rodeo Beach, which is adjacent to Bird Island, where seabirds such as brown pelicans, common murres (*Uria aalge*), and Brandt's cormorants (*Phalacrocorax penicillatus*) are found. On-leash dog walking would be allowed on the footbridge to the beach. Lastly, opportunities for visitors to experience a beach in the Marin Headlands without the presence of dogs would be available at other beaches in the Marin Headlands, including South Rodeo Beach.

Marin Headlands Trails

On-leash dog walking would be allowed only on: the lower Rodeo Valley trail corridor, including the connector trail to the Smith Road Trailhead, which runs from the Rodeo Beach parking lot to the intersection of Bunker and McCullough roads on the North Lagoon Loop Trail, and sections of the

Miwok Trail, and Rodeo Valley trail; the Batteries Loop Trail and the Old Bunker Fire Road Loop. All other trails in the Marin Headlands, which includes Tennessee Valley, would be no-dog areas, providing visitors the opportunity to experience the park without the presence of dogs.

This alternative would maintain the integrity of habitat within the interior of the Marin Headlands by restricting dog walking to trails at the perimeter of the large expanse of contiguous habitat. This alternative would also provide protection for wildlife and native habitat and protect mission blue butterflies and their habitat along the North Miwok Trail and the sections of the Coastal Trail/Fire Road.

Fort Baker

For Fort Baker, alternative C would be the same as alternative B (on-leash dog walking), except that alternative C would add on-leash dog walking on Battery Yates Loop Road. Dog walkers with NPS-issued permits would be allowed to walk four to six dogs in the same areas, except that permitted dog walking would not be allowed on Drown Fire Road.

San Francisco County Sites (Alternative C)

Upper and Lower Fort Mason

Dog walking under voice and sight control would be allowed only within VSCAs in the Inner Great Meadow and Laguna Green areas, with barriers to separate the VSCAs from other uses. Upper Fort Mason is easily accessible from residential neighborhoods in San Francisco and the VSCAs would provide areas for dogs to exercise and socialize in an unrestricted environment. On-leash dog walking would be required on all sidewalks, roadways, paved trails, and open areas around housing at Fort Mason, as well as on the lawn below the path paralleling Laguna Street; on-leash dog walking would also be allowed in Lower Fort Mason. The on-leash requirement for public access pathways and trails and in the parking lots at Lower Fort Mason would increase safety for visitors by reducing interactions with dogs under voice and sight control that may result in public conflict and visitor injuries due to falls or bites. The Community Garden, and portions of the Great Meadow and the parade ground would continue to provide visitors the opportunity to experience the park without the presence of dogs.

Crissy Field

Wildlife Protection Area (Torpedo Wharf to approximately 900 feet east of the former Coast Guard Pier). Dog walking would not be allowed within the Crissy Field WPA, the same as in alternative B.

Promenade, Airfield, Beaches, Trails, and Grassy Areas. Dog walking under voice and sight control would be allowed only within VSCAs on the airfield and Central Beach. These two VSCAs would provide areas for off-leash exercise and socialization for dogs in less heavily used sections of Crissy Field. The VSCA on the airfield would be in the middle section, between the easternmost and westernmost north/south paths.

The NPS would reduce or temporarily suspend the VSCA as necessary for special events. Fencing would not be required to establish the VSCA boundaries, eliminating a potential impact to cultural resources at the airfield. Central Beach is not heavily used by visitors except dog walkers. Designating only the Central Beach portion of the Crissy Field beachfront as a VSCA would reduce potential conflict among the many diverse users of East Beach and improve visitor safety and enjoyment.

On-leash dog walking would be allowed on the eastern and western sections of the airfield, east of the easternmost north/south path, and west of the westernmost north/south path. On-leash dog walking would also be allowed on the promenade, the paths leading to Central Beach, the trails and grassy areas south of East Beach, the Mason Street Bike Path, and within the grassy areas near the old Coast Guard station.

Fort Point Promenade / Fort Point National Historic Site Trails

Alternative C for the Fort Point Promenade and NHS trails within GGNRA would continue under the current management policy (alternative A, allowing on-leash dog walking on the Fort Point Promenade, Battery East Trail, Andrews Road, Presidio Promenade, and grassy area near the parking lot restroom).

Baker Beach and Bluffs to Golden Gate Bridge

Alternative C would be the same as alternative B (on-leash dog walking except for the Batteries to Bluffs and Battery Crosby Trails).

Fort Miley

On-leash dog walking would be allowed only in the trail corridor along the east edge of East Fort Miley. This would provide visitor safety, separating visitors from the hazardous, steep embankments above the adjacent concrete bunkers, and would minimize the potential for visitor conflicts in the picnic area. In addition, this restriction would minimize conflicts with users coming to the area for bird watching, and, particularly during migratory season, would protect bird habitat from potential damage resulting from dogs under voice control. Based on the outcome of discussions with the City of San Francisco, a new trail may connect the East Fort Miley trail corridor with El Camino del Mar across San Francisco property.

Alternative C would not allow dogs in West Fort Miley, providing visitors the opportunity for passive recreational experiences without the presence of dogs and eliminating the potential for visitor conflicts around the Fort Miley Adventure Challenge Course. This alternative would also provide protection for significant bird habitat and prime bird watching areas for visitors. At West Fort Miley, dogs would not be allowed in picnic areas as there is no dog walking access.

Lands End

Dog walking at Lands End under alternative C would be the same as under alternative B (on-leash dog walking on the El Camino del Mar Trail, Lands End Coastal Trail, and connecting trails and steps). The restored section of the Lands End Coastal Trail is heavily used and FRA accessible; its use is projected to increase because of the restoration and FRA compatibility. The new Lands End Visitor Center has also increased visitation in the Lands End area. Requiring on-leash dog walking along the Lands End Coastal Trail would reduce the potential for user conflicts and would enhance visitor safety and dog safety.

This alternative would provide protection of wildlife from potential interactions with dogs.

Sutro Heights Park

For Sutro Heights Park, alternative C would be the same as alternative B (on-leash dog walking on the paths and parapet).

Ocean Beach

Snowy Plover Protection Area (SPPA), Stairwell 21 to Sloat Boulevard. Under alternative C, dog management within the SPPA would be the same as described under alternative B (on-leash dog walking only on the Ocean Beach Trail adjacent to the Great Highway; no dogs allowed on the beach between Stairwell 21 and Sloat Boulevard).

North of Stairwell 21 and South of Sloat Boulevard. Dog walking under voice and sight control would be allowed in a VSCA stretching north from Stairwell 21 to the north end of Ocean Beach. Dogs would not be allowed south of Sloat Boulevard. Data shows that wintering and migratory shorebird use along this section of the beach is lower than in the SPPA south of Stairwell 21 and on the section of beach south of Sloat Boulevard, and restricting dog walking to north of Stairwell 21 would provide protection for wintering and migratory shorebirds elsewhere on the beach. This restriction would also allow visitors a beach experience that would not include the presence of dogs. Alternative C would also provide consistent dog management along the beach from the Fort Funston Beach Trail north to Stairwell 21.

Fort Funston

Dog walking under voice and sight control would be allowed in two designated VSCAs, one on the beach south of the Funston Beach Trail North and a second between (and not including) the Chip Trail, Sunset Trail, and parking lot. On-leash dog walking would be allowed on all trails north of the parking lot except the section of the Sunset Trail between the parking lot and the Chip Trail, Battery Davis Trail, and Funston Horse Trail, which would be closed to dogs. South of the main parking lot, on-leash dog walking would be allowed on the Funston Beach Trail South (sand ladder) and the Sunset Trail along the south perimeter of the parking lot. The combination of VSCAs and on-leash trails would provide a loop for dog walkers from either the main parking lot or the John Muir parking lot to the Funston Beach Trail North, then down to the beach and into the VSCA south of the Funston Beach Trail North. From the southern end of the beach VSCA, the Funston Beach Trail South (sand ladder) would return dog walkers to the main parking lot and the adjacent VSCA. No dog walking would be allowed on the beach north of the Funston Beach Trail North.

This alternative would provide protection to migratory and wintering shorebirds and bank swallow habitat north of the beach access trail and would provide visitors with the opportunity to experience the area both with and without the presence of dogs. Alternative C would also provide protection for cultural resources (Battery Davis) and habitat areas undergoing restoration. Requiring on-leash dog walking along trails would provide protection for dogs and their owners near the sand cliffs and would reduce the potential for user conflicts and safety incidents among dogs as well as with visitors as a result of having dogs under voice control.

San Mateo County Sites (Alternative C)

Mori Point

On-leash dog walking would be allowed only on Old Mori Trail, the Mori Coastal Trail, and the section of the beach that is within the GGNRA boundary. Requiring on-leash dog walking at Mori Point is for the protection of sensitive habitat and of the federally listed California red-legged frog and San Francisco garter snake.

Milagra Ridge

Under alternative C, dog management designations for Milagra Ridge would be the same as those under alternative B (on-leash dog walking on the Fire Road, trail to overlook, WW II bunker, and future Milagra Battery Trail).

Sweeney Ridge / Cattle Hill

Under alternative C, dog management at Sweeney Ridge would be identical to dog management actions described in alternative B (no dogs). On-leash dog walking would be allowed at Cattle Hill on the Baquiano Trail from Fassler Avenue to, and including, the Farallon View Trail.

Rancho Corral de Tierra

Alternative C would be the same as alternative B, with the addition of a VSCA on open land between Le Conte Avenue and Tamarind Street, across the street and east of Farallone View School. The addition of a small VSCA in this alternative would provide an option for dog walking under voice and sight control for the neighborhood, but would not be expected to draw significant visitation from outside the neighborhood due to the small size of the VSCA. This would reduce the potential for parking or traffic impacts on the neighborhood, and the small size and access from the street would also simplify enforcement. This alternative would provide an additional dog walking opportunity at this site while maintaining protection for the more remote habitat that is contiguous with protected open space managed by other agencies and providing options for those visitors who prefer a no-dog experience.

ALTERNATIVE D: MOST PROTECTIVE OF RESOURCES AND VISITOR SAFETY

Alternative D would offer greater protection of GGNRA natural and cultural resources, including sensitive and protected species.

Alternative D would offer greater protection of GGNRA natural and cultural resources, including sensitive and protected species, while allowing recreation opportunities and experiences for multiple user groups, including dog walkers. However, this alternative would prohibit commercial dog walking. Alternative D would also offer more protection for visitors and staff from potential incidents with dogs. Similar to alternatives C and E, this alternative would include some areas for dog walking under voice and sight control in VSCAs, where users must adhere to specific guidelines initiated by the Negotiated Rulemaking Committee and finalized by NPS staff (appendix E).

COST OF IMPLEMENTATION

The total costs of implementing alternative D are estimated at $2,398,701. The bulk of these costs are associated with the hiring of additional personnel for implementing the dog management plan. For a more detailed explanation of personnel costs under alternative D, see the “Park Operations” section in chapter 4.

DOG WALKING ACTIVITIES PROPOSED UNDER ALTERNATIVE D

A description of the specific aspects of alternative D and their rationale are presented here for each park site, listed in order from north to south, and shown on alternative D maps (see “Maps”). The following

discussion of the alternative options for each site describes resource impacts from dog walking in a generalized way. Details on these resource impacts can be found in the impact analyses in chapter 4.

Marin County Sites (Alternative D)

Stinson Beach

Under alternative D, no dogs would be allowed in any area of Stinson Beach. As in all the alternatives, the beach, as a designated swimming beach, is closed to dogs by the CFR. Prohibiting dogs in the picnic areas and parking lots would remove the potential for conflicts between dogs and visitors and would provide visitors the opportunity to experience Stinson Beach without the presence of dogs.

Homestead Valley

On-leash dog walking would be allowed only on Homestead Fire Road, which runs from Panoramic Highway to Lattie Lane in Mill Valley. This alternative would provide the most protection for native plant communities and wildlife, including habitat for the federally listed northern spotted owl. Allowing on-leash dog walking on only the fire road would provide visitors the opportunity to experience the site without the presence of dogs, while still allowing access for dog walkers from the local area.

Alta Trail / Orchard Fire Road / Pacheco Fire Road

Under alternative D, Alta Trail and the two fire roads in this site (Pacheco and Orchard) would be no-dog areas. Prohibiting dogs would provide the most protection for native plant communities and wildlife habitat, including habitat for the federally listed mission blue butterfly, and would eliminate the potential for conflicts between dogs and coyotes. Alternative D would also allow multiple user groups to experience Alta Trail and Pacheco and Orchard fire roads without the presence of dogs. This management option would also eliminate the potential for incidents between dogs, dog walkers, and other users, resulting in the potential for improved visitor safety.

Oakwood Valley

On-leash dog walking would be allowed only on Oakwood Valley Fire Road and on Oakwood Valley Trail to the junction with the Fire Road. This alternative would provide protection for contiguous habitat beyond the trail and fire road junction and would limit the potential for dog/coyote interaction. It would also provide protection for potential habitat for species of concern, such as the mission blue butterfly habitat nearby and possible habitat for the northern spotted owl.

Muir Beach

Alternative D would allow on-leash dog walking only along the proposed Muir Beach Trail; dogs would not be allowed on the beach. Alternative D would provide the most protection to sensitive dune, riparian, and wetland habitats. Protection of riparian and wetland habitats would result in protection of species such as the federally listed steelhead and coho salmon from potential impacts resulting from dog waste and disturbance in shallow water areas. This management option would also provide the most protection for wintering and migrant shorebirds from potential disturbance by dogs. Muir Beach is a heavily used area that provides a variety of visitor experiences; restricting dog walking to the proposed Muir Beach Trail would provide a no-dog beach experience for visitors at this site.

Rodeo Beach / South Rodeo Beach

On-leash dog walking would be allowed only on the section of Rodeo Beach north of the footbridge and on the footbridge itself. This would provide some beach access for dog walking at Rodeo Beach but would maximize resource protection of Rodeo Lagoon, providing habitat for resting and feeding for shorebirds and waterbirds in the area. Lastly, visitors would have the opportunity to experience a portion of the beach without the presence of dogs.

Marin Headlands Trails

Under alternative D, dog management designations for Marin Headlands Trails would be the same as those under alternative B (no dogs).

Fort Baker

On-leash dog walking would be allowed only on the Lodge and Conference Center grounds, the Bay Trail (not including the Battery Yates Loop) and the trail to be built around Vista Point that will connect with the Bay Trail. The on-leash designation would allow maximum resource protection for sensitive species and their habitats, including the mission blue butterfly, and would minimize the potential for conflicts around the lodge and conference center, where visitation has increased over recent years (NPS 2012c). The proposed future improvements to the waterfront area at Fort Baker are anticipated to further increase overall visitation to the site. Prohibiting dogs in areas beyond the Lodge and Conference Center grounds and the Bay Trail in this alternative would provide visitors with an opportunity to experience the park without the presence of dogs and maximize safety for visitors.

San Francisco County Sites (Alternative D)

Upper and Lower Fort Mason

Dog walking under voice and sight control would be allowed only in a VSCA on the Laguna Green area. On-leash dog walking would be allowed on the Great Meadow, the lawn below Laguna Street path, and on all public access pathways, trails, open areas around housing, and in Lower Fort Mason, increasing safety for visitors. The existing planted landform between the Laguna Green VSCA and the Great Meadow would reduce the potential for conflict between on-leash dogs and dogs under voice and sight control and would provide safety for visitors to areas outside the VSCA. The VSCA would be easily accessible from residential neighborhoods in San Francisco and would allow dogs to enjoy exercise and socialization in an unrestricted environment. Other visitors would still find areas of Upper Fort Mason in which to experience the park without the presence of dogs.

Crissy Field

Wildlife Protection Area. (Torpedo Wharf to approximately 900 feet east of the former Coast Guard Pier). As with alternatives B and C, dogs would not be allowed in the WPA under this alternative.

Promenade, Airfield, Beaches, Trails, and Grassy Areas. Dog walking under voice and sight control would be allowed in a VSCA on the western portion (area west of the easternmost north/south path across the airfield) of the airfield. The NPS would reduce or temporarily suspend the VSCA as needed for special events using the airfield. On-leash dog walking would be allowed on the Promenade (East Beach to the Warming Hut), the eastern portion of the airfield (area east of the easternmost north/south path), the trails and grassy areas south of East Beach, the Mason Street Bike Path, and within the grassy areas near the old Coast Guard station. No dog walking would be allowed on the East and Central Beaches.

Although all other alternatives are guided by the common element applicable to all action alternatives of on-leash dog walking being allowed in parking lots and picnic areas throughout the park, this alternative closes the West Bluff picnic area to dogs. This option was suggested by a dog walking group that participated in the negotiated rulemaking process to provide an area for visitors desiring a picnic area without the presence of dogs and to provide maximum protection to the WPA adjacent to the picnic area, where dogs are prohibited.

Alternative D would maximize visitor safety on the beaches and eliminate the potential for conflict between multiple user groups, particularly on the heavily used East Beach. Alternative D would also provide the maximum protection of natural resources on the beaches from dog waste and disturbance.

Fort Point Promenade / Fort Point National Historic Site Trails

On-leash dog walking would be allowed only on the Battery East Trail, which leads from the eastern end of the Fort Point Promenade up to the Golden Gate Bridge. This alternative addresses safety concerns for visitors and dogs on the promenade, which is between the edge of a heavily used roadway and the edge of the seawall, and on trails at this site that are heavily used by visitors and can be congested. This alternative reduces the potential for conflicts among users and the possibility of interactions with aggressive dogs and compromised visitor and dog safety.

Baker Beach and Bluffs to Golden Gate Bridge

On-leash dog walking would be allowed on the beach south of the north end of the north parking lot and on all trails to the beach south of the north end of the north parking lot, as well as on the Coastal Trail.

Alternative D would allow visitors the opportunity to experience a portion of the beach without the presence of dogs by providing distinctly separate and direct access to a no-dog portion of the beach, an area where the new Batteries to Bluffs trail has increased visitation. This alternative would also provide protection from disturbance for wintering and migrant shorebirds on the beach.

Fort Miley

Under alternative D, dog management at both East and West Fort Miley would be the same as alternative B (no dogs).

Lands End

On-leash dog walking would be allowed on the El Camino del Mar Trail and on the Lands End Coastal Trail up to and including the connecting trail between those two trails, providing a dog walking loop trail experience. The stairs connecting the Lands End Coastal Trail with the Memorial Parking Lot would also be on-leash. This alternative would provide protection for natural resources and visitor safety. The restored portion of the Lands End Coastal Trail, which is FRA accessible, is heavily used by visitors, and the recent completion of the new Lands End Visitor Center has increased visitation to the area. This alternative would minimize visitor conflicts with dogs and dog walkers and would also allow a significant section of the Lands End Coastal Trail where visitors can experience the area without the presence of dogs.

Sutro Heights Park

Under alternative D, no dogs would be allowed throughout the Sutro Heights Park area, where weddings and other special events are frequently scheduled. Prohibiting dogs in the area would provide protection for the formal landscaping. Dog walkers would be able to access other nearby area trails, such as those at Lands End, from the parking area.

Ocean Beach

Snowy Plover Protection Area (SPPA), Stairwell 21 to Sloat Boulevard. Under alternative D, dog management for the Ocean Beach SPPA would be the same as described in alternative B (on-leash dog walking only on the Ocean Beach Trail adjacent to the Great Highway; no dogs would be allowed on the beach between Stairwell 21 and Sloat Boulevard).

North of Stairwell 21 and South of Sloat Boulevard. On-leash dog walking would be allowed on the beach north of Stairwell 21. No dogs would be allowed south of Sloat Boulevard. The on-leash designation would reduce the potential for conflict among visitors in the heavily used north end of the beach, closest to the parking lot, and would maximize protection for wintering and migratory shorebirds south of Sloat Boulevard. This management option would also be consistent with the alternative D actions for the northern section of the beach at Fort Funston, which is immediately south of Ocean Beach.

Fort Funston

Dog walking under voice and sight control would be allowed only in an upland VSCA established, with fencing, in a disturbed area across the Sunset Trail from the top of the Funston Beach Trail North. On-leash dog walking would be allowed on the beach south of the Funston Beach Trail North to the southern boundary of the Fort Funston beach. On-leash dog walking would also be allowed on all trails except the Funston Horse Trail, where dogs are not allowed to prevent user conflicts and impacts to the habitat corridor, and the section of the Sunset Trail north of its junction with the Funston Horse Trail, where all visitors are prohibited due to severe erosion.

This alternative would provide dog walkers with an on-leash loop option, starting either at the main parking lot or the John Muir parking lot, following trails north to the VSCA adjacent to the Funston Beach Trail North. From there, the loop would continue down the Funston Beach Trail North and south along the beach to the Funston Beach Trail South (sand ladder), which leads back to the main parking lot and the Sunset Trail.

This alternative would protect restored habitat and Battery Davis; reduce conflict with multiple user groups, including school groups visiting the Environmental Education Center; and reduce safety concerns near the cliffs. The alternative would also provide protection for wintering and migratory shorebirds and the seasonal bank swallow colony in the sand cliffs at the north end of the Fort Funston beach. The exclusion of dogs from the beach area north of the Funston Beach Trail North would provide visitors the opportunity to experience the area without the presence of dogs. In addition, this alternative would also allow continuity with dog management for the south end of Ocean Beach, which is located directly north of the Fort Funston beach.

San Mateo County Sites (Alternative D)

Mori Point

Alternative D would prohibit dogs at Mori Point. This alternative would provide the most protection for newly restored, sensitive habitat and for the federally listed California red-legged frog and San Francisco garter snake. This alternative would also reduce the potential for conflict with other user groups, particularly walkers, hikers, and bicyclists. This management option would allow visitors the opportunity to experience the area without the potential for disturbance from the presence of dogs.

Milagra Ridge

Alternative D would prohibit dogs at Milagra Ridge. This alternative would provide the greatest level of protection for federally endangered species (mission blue butterfly, San Bruno elfin butterfly, San Francisco garter snake, and California red-legged frog) and their habitats that exist at Milagra Ridge and is consistent with GGNRA's park wide management of mission blue butterfly habitat areas. Alternative D would also protect restored habitat and the wildlife species that inhabit the area. Dog interactions with wildlife, including coyotes, could be detrimental to the safety of both dogs and wildlife from physical conflicts. This management option would provide an expanse of trails for visitors to experience without the potential for disturbance from the presence of dogs.

Sweeney Ridge / Cattle Hill

The dog management actions for Sweeney Ridge and Cattle Hill in alternative D would be the same as alternative B (no dogs).

Rancho Corral de Tierra

Alternative D would allow on-leash dog walking on the two existing San Mateo County trails: Old San Pedro Mountain Road and Farallon Cutoff in Montara. This alternative would provide maximum protection for habitat and wildlife, while allowing on-leash dog walking access and management consistency on the two trails that connect the Rancho site with the adjacent McNee State Park. This alternative would also provide ample opportunities for visitors who prefer a no-dog experience.

ALTERNATIVE E: MOST DOG WALKING ACCESS / MOST MANAGEMENT INTENSIVE

Alternative E would offer recreation opportunities and experiences for multiple user groups, including dog walkers; however, this alternative would allow dog walkers more access to GGNRA areas than the other alternatives while still providing protection for natural and cultural resources, including sensitive and protected species. Alternative E also provides for visitor protection and dog safety, and minimizes conflict between dog walkers and other visitors.

Alternative E would offer recreation opportunities and experiences for multiple user groups, including dog walkers.

For all sites, alternative E allows all dog walkers, including commercial dog walkers, to walk one to three dogs without a permit. A permit may be obtained to walk more than three dogs, to a maximum of six dogs (appendix F). Dogs must be on a leash unless in a VSCA, where permit holders may have up to six dogs under voice and sight control. Permits may restrict use by time and location. Permitted dog walking would not be authorized in picnic areas. Permits would be issued for Alta Trail, Rodeo Beach, Fort Baker, Fort Mason, Crissy Field, Baker Beach, and Fort Funston.

Similar to alternative C, alternative E includes the Negotiated Rulemaking Committee consensus on Oakwood Valley. Details on the negotiated rulemaking process are provided in chapter 1.

COST OF IMPLEMENTATION

The total costs of implementing alternative E are estimated at $2,866,198. The bulk of these costs are associated with the hiring of additional personnel for implementing the dog management plan. For a more detailed explanation of personnel costs under alternative E, see the "Park Operations" section in chapter 4.

DOG WALKING ACTIVITIES PROPOSED UNDER ALTERNATIVE E

A description of the specific aspects of alternative E and their rationale are presented here for each park site, listed in order from north to south, and shown on alternative E maps (see "Maps"). The following discussion of the alternative options for each site describes resource impacts from dog walking in a generalized way. Details on these resource impacts can be found in the impact analyses in chapter 4.

Marin County Sites (Alternative E)

Stinson Beach

As with alternatives B and C, alternative E would allow on-leash dog walking only in the parking lots, and picnic areas at Stinson.

Homestead Valley

Alternative E would be the same for Homestead Valley as alternative B (on-leash dog walking on the Homestead Fire Road and neighborhood connector trails, the Homestead Trail and Homestead Summit Trail, that will be designated in the future).

Alta Trail / Orchard Fire Road / Pacheco Fire Road

Alternative E would allow on-leash dog walking on Alta Trail to the junction with the Morning Sun Trail. On-leash dog walking would also be allowed on the Orchard and Pacheco fire roads. Alternative E would provide an on-leash trail loop (using public streets in addition to NPS trail system) for Marin City residents to access Alta Trail and would allow additional neighborhood access by extending on-leash access on the Alta Trail to two connector trails further south (See Marin Headlands Trails alternative).

Oakwood Valley

Similar to alternative C, the management of Oakwood Valley represents the consensus agreement of the Negotiated Rulemaking Committee. Dog walking under voice and sight control would be allowed within a VSCA, with the installation of double gates and fencing, on Oakwood Valley Fire Road to the junction with the Oakwood Valley Trail. However, in this alternative the fencing would be non-continuous, as opposed to the continuous fencing in alternative C. On-leash dog walking would be required on Oakwood Valley Trail from the junction with the Oakwood Valley Fire Road to a new gate at the junction with Alta Trail. This approach would reduce the potential for dogs to access and potentially damage sensitive habitat and would provide protection for nearby habitat for mission blue butterfly habitat. This alternative would also reduce the potential for disturbance and possible interactions between dogs under voice and sight control and wildlife in the area, especially other canids, such as coyotes. Park visitors would also have the opportunity for a no-dog park experience on the southern section of the Oakwood Valley Trail.

Muir Beach

Dog walking under voice and sight control would be allowed only within a VSCA on the beach south of Kaashi Way; dogs would be prohibited on the remainder of the beach outside the VSCA. In the future, VSCA boundaries may need to be adjusted to correspond with habitat restoration occurring as part of the Muir Beach Wetland and Creek Restoration Project. As part of the restoration project, areas may be fenced (existing or future) or signed as closed to the public to protect dunes, sensitive habitat/species, restoration areas, or other sensitive resources. On-leash dog walking would be allowed on Muir Beach Trail, on the boardwalk, and on Kaashi Way between the boardwalk and the beach. Muir Beach is a multiple-use area, which requires management to provide a variety of visitor experiences for all user groups, including dog walkers. Alternative E provides recreational experiences at Muir Beach for dog walkers as well as for visitors preferring a park experience without the presence of dogs. As discussed previously for alternative C, restricting on-leash dog walking to designated areas would provide protection for riparian and wetland habitat, as well as for federally listed steelhead and coho salmon.

Rodeo Beach / South Rodeo Beach

Dog walking under voice and sight control would be allowed within VSCAs on Rodeo Beach and South Rodeo Beach under alternative E, and on leash on the bridge and trail that access those beaches. The main Rodeo Beach VSCA would be bounded on the inland edge by the proposed fence along the western edge of Rodeo Lagoon. The South Rodeo Beach VSCA would encompass that entire beach. The two VSCAs would provide space for exercising dogs under voice and sight control in areas that historically have had relatively few conflicts between dog walkers and other users. The Rodeo Beach/South Rodeo Beach area is not heavily used by migrating and wintering shorebirds, so disturbance from chasing by dogs would be expected to be minimal. Opportunities for visitors to experience a Marin Headlands beach without the presence of dogs would be available on other beaches in the Marin Headlands area, although access to those beaches is less direct than access to Rodeo Beach or South Rodeo Beach.

Marin Headlands Trails

On-leash dog walking would be allowed on the Coastal Trail from Highway 101 to the Rodeo Beach parking lot (following the Conzelman Coastal Trail paralleling Conzelman Road from Highway 101 to the intersection with McCullough Road and then following the Coastal Trail Bike route – including Julian Road – to Rodeo Beach Parking lot); the Old Bunker Fire Road Loop; the Batteries Loop Trail; the North Miwok Trail (Tennessee Valley to Highway One); County View Trail; Marin Drive access trail; Rodeo Avenue Trail and the Morning Sun Trail. Alternative E would provide the largest amount of access and connections to local communities and greatest variety of on-leash dog walking opportunities within the Marin Headlands. At the same time it would protect the expanse of contiguous habitat within the interior of the Marin Headlands by requiring dogs to be on leash and allowing that use only on trails near the built area on the perimeter of the site. This alternative would also protect native habitat, including mission blue butterfly habitat, and provide visitors the opportunity to experience this large natural area of the park without the presence of dogs.

Fort Baker

For Fort Baker, alternative E would be the same as alternative C, allowing on-leash dog walking on the Drown Fire Road, Bay Trail including the Battery Yates Loop Road, the new Vista Loop Trail to be built in 2014 that will connect to the Bay Trail and on the Lodge/Conference Center grounds and the parade ground. Dog walkers with NPS-issued permits would be allowed to walk four to six dogs in the same areas, except that permitted dog walking would not be allowed on Drown Fire Road. Alternative E would

provide a mix of visitor uses, including a large variety of opportunities for dog walkers, while still protecting natural and cultural resources at the site and allowing some areas for a no-dog experience.

San Francisco County Sites (Alternative E)

Upper and Lower Fort Mason

Alternative E would be the same as alternative C, allowing dog walking under voice and sight control within VSCAs in the Inner Great Meadow and Laguna Green areas, with barriers to separate the VSCAs from other uses. The VSCAs would provide areas for dogs to exercise and socialize in an unrestricted environment. On-leash dog walking would be required on all sidewalks, roadways, paved trails, and open areas around housing at Fort Mason, as well as on the lawn below the path paralleling Laguna Street; on-leash dog walking would also be allowed in Lower Fort Mason. The on-leash requirement would increase safety for visitors by reducing interactions with dogs under voice and sight control that may result in public conflict and visitor injuries due to falls or bites. The Community Gardens and portions of the Great Meadow and the parade ground would continue to provide visitors the opportunity to experience the park without the presence of dogs.

Crissy Field

Wildlife Protection Area (Torpedo Wharf to approximately 900 feet east of the former Coast Guard Pier). On-leash dog walking would be allowed in the WPA. This would provide expanded dog walking on the beach while still reducing the disturbance to the federally listed western snowy plover and other wintering and migratory shorebirds.

Promenade, Airfield, Beaches, Trails, and Grassy Areas. Dog walking under voice and sight control would be allowed in VSCAs established on Central Beach and on the airfield. Central Beach is not heavily used by visitors other than dog walkers, and the airfield is a relatively little-used portion of Crissy Field except during special events. On-leash dog walking would be allowed along the Promenade (East Beach to the Warming Hut), on East Beach, the trails and grassy areas south of East Beach, the paths to Central Beach, within the grassy areas near the old Coast Guard station and the Mason Street Bike Path, which are heavily used by pedestrians, bicyclists, and other visitors, to reduce uncontrolled dog/human interactions and provide visitor safety. No fencing would be used around the airfield VSCA, in order to minimize impacts to the cultural landscape.

The East Beach portion of Crissy Field is heavily used by multiple user groups because of its proximity to parking, picnic areas, and facilities. Having Central Beach dedicated as a VSCA while requiring on-leash dog walking at East Beach would reduce potential conflict between dogs under voice and sight control and the many and diverse users of East Beach. In turn, this would improve visitor safety and enjoyment.

Fort Point Promenade / Fort Point National Historic Site Trails

Alternative E would be the same as the current management policy (alternative A); on-leash dog walking allowed on the Fort Point Promenade, Battery East Trail, Andrews Road, Presidio Promenade, and grassy area near the parking lot restroom.

Baker Beach and Bluffs to Golden Gate Bridge

Dog walking under voice and sight control would be allowed in a VSCA on the section of Baker Beach south of the north parking lot to the NPS boundary at Lobos Creek. On-leash dog walking would be allowed on the section of Baker Beach north of the north parking lot and on all trails except the new

Batteries to Bluffs Trail and the Battery Crosby Trail, where dog walking would be prohibited. Requiring that dogs be on leash on the northern section of beach would provide an area of protection from disturbance by uncontrolled dogs for wintering shorebirds while providing the most dog walking access at Baker Beach.

Fort Miley

On-leash dog walking would be allowed in the trail corridor along the east edge of East Fort Miley. This would provide visitor safety, separating visitors from the hazardous, steep embankments above the adjacent concrete bunkers, and would minimize the potential for visitor conflicts in the West Fort Miley picnic area. In addition, this restriction would minimize conflicts with users coming to the area for bird watching, and, particularly during migratory season, would protect bird habitat from potential damage resulting from dogs under voice control. Based on the outcome of discussions with the City of San Francisco, a new trail may connect the East Fort Miley trail corridor with El Camino del Mar across San Francisco property.

In West Fort Miley, on-leash dog walking would be allowed only on the old roadway through the site. This would allow the multiple users of the area to have a park experience either with or without the presence of dogs. This alternative also provides protection for significant bird habitat and prime bird watching areas.

Lands End

Alternative E would allow the same on-leash dog walking opportunities for Lands End as alternative B (on-leash dog walking on the El Camino del Mar Trail, Lands End Coastal Trail, and connecting trails and stairs).

Sutro Heights Park

On-leash dog walking would be allowed on the paths, parapet, and lawns of Sutro Heights Park. This alternative would provide the greatest dog walking access to Sutro Heights Park. This area is heavily landscaped and developed; therefore, allowing on-leash dog walking throughout the site would not disturb or destroy native habitat. Because Sutro Heights Park is a mixed-use area and is frequently used for weddings and other special events, it would not be suitable for dog walking under voice and sight control. Maintaining Sutro Heights Park as an on-leash area would protect the formal landscaping and reduce the potential for visitor conflict and safety incidents that could occur if dogs were under voice and sight control.

Ocean Beach

Snowy Plover Protection Area (SPPA) - Stairwell 21 to Sloat Boulevard. Dog walking would be allowed on leash in the SPPA and along Ocean Beach Trail adjacent to the Great Highway. This alternative would provide the most dog walking access. Requiring on-leash dog walking would maintain the level of protection currently in place seasonally for western snowy plovers and other shorebirds but would extend that protection throughout the year to eliminate visitor confusion and provide better year-round protection for the shorebirds.

North of Stairwell 21 and South of Sloat Boulevard. Dog walking under voice and sight control would be allowed in a VSCA established from Stairwell 21 to the northern end of the beach. Long-term data indicates that shorebird use along this section of the beach is lower than in the SPPA between Stairwell 21 and Sloat Boulevard.

On-leash dog walking would be allowed south of Sloat Boulevard to Fort Funston. This management proposal for the southern section of Ocean Beach would be consistent with the alternative E proposal for the adjacent Fort Funston beach north of the beach access trail, and together with the on-leash proposal for the SPPA in this alternative would provide approximately three miles of on-leash dog walking along the beach. The on-leash requirement south of Sloat Boulevard would provide protection for the high number of shorebirds that use this area.

Fort Funston

Dog walking under voice and sight control would be allowed in two VSCAs at Fort Funston. One VSCA, on the beach south of the Funston Beach Trail North to the southern boundary of Fort Funston, would provide part of a loop trail for dog walkers between the Fort Funston uplands and the beach. A second VSCA would be established as a corridor from north of the trail to be built along the northern edge of the main parking lot that extends to, and includes the Funston Beach Trail North. The VSCA corridor includes the Chip Trail and sections of the Sunset Trail, Funston Road and Battery Davis Road - all north of the parking lot. The VSCA also extends into the disturbed area across from the Funston Beach Trail North.

On-leash dog walking would be allowed on the beach north of the Funston Beach Trail North. There is a seasonal advisory for the area at the base of the northernmost sand cliffs to provide protection for the bank swallow colony that nests in the sand cliffs (April 1–August 15). On-leash dog walking would also be allowed on all trails at Fort Funston outside the VSCA corridor except the Funston Horse Trail, which is within a habitat corridor running along the eastern boundary of Fort Funston and is closed to dogs for resource protection and to eliminate visitor conflicts. The combination of the on-leash walking along the Funston Beach Trail South (sand ladder), the beach VSCA and the upland VSCA corridor which includes the Funston Beach Trail North, would provide dog walkers with a loop trail around Fort Funston, starting from either the main parking lot or the John Muir parking lot. Also, the on-leash designation for the Fort Funston beach north of the Funston Beach Trail North, together with the alternative E on-leash proposal for Ocean Beach from its southern end to Stairwell 21, would provide approximately three miles of on-leash dog walking along the beach.

This alternative would provide the greatest expanse of VSCA compared to the other alternatives. Requiring on-leash dog walking along trails would provide protection for dogs and their owners and would reduce the potential for user conflicts and safety incidents among dogs and visitors. This alternative would also provide protection of restored areas at the site and at Battery Davis.

San Mateo County Sites (Alternative E)

Mori Point

On-leash dog walking would be allowed on the Mori Coastal Trail, Old Mori Trail, Pollywog Trail, and the beach area within the GGNRA boundary. This alternative provides the most dog walking access for visitors. The on-leash designation would be consistent with the City of Pacifica regulations for the levee area and beach and would facilitate access to Mori Point for the neighboring community residents who want to walk with their dogs. Requiring dogs to be on leash along the Old Mori Trail would also provide protection for habitat for the federally listed California red-legged frog and San Francisco garter snake, including their breeding habitat in restored ponds adjacent to the road. This alternative would also allow visitors the opportunity to experience some trails in the area without the presence of dogs.

Milagra Ridge

Alternative E would be the same at Milagra Ridge as alternative B (on-leash dog walking allowed only on the Fire Road, the trail to the overlook and WW II bunker, and the Milagra Battery Trail), with the addition of on-leash access on the paved trail leading to the top of the hill opposite the bunker. The on-leash designation for the fire road and trail takes into account the need for protection of restored habitat where wildlife, including coyotes, could encounter dogs if under voice and sight control. Dog interactions with wildlife could be detrimental to the safety of both dogs and wildlife. This alternative would also provide an area for visitors to experience portions of the site without the presence of dogs.

Sweeney Ridge / Cattle Hill

On-leash dog walking would be allowed at Sweeney Ridge on Sneath Lane, the section of the Sweeney Ridge Road north of the Portola Discovery Site to the Notch Trail and to the Mori Ridge Trail. On-leash dog walking would be allowed on Cattle Hill only on the Baquiano Trail from Fassler Avenue to, and including, the Farallon View Trail.

This alternative would provide protection to a large expanse of native habitat, including habitat for the federally listed mission blue butterfly, at Sweeney Ridge and Cattle Hill, while still providing some trails on which visitors could walk their dogs. Requiring on-leash dog walking would also reduce the potential for dogs interacting with wildlife, which could cause conflicts and safety issues for the dogs, their owners, and wildlife. Finally, the alternative would provide trails that would allow a visitor experience without the presence of dogs.

Rancho Corral de Tierra

Alternative E would be the same as alternative C. This alternative would provide dog walking both on leash and in a VSCA, but due to the small size of the VSCA, would not be expected to draw significant levels of visitation from outside the neighborhood that would cause significant traffic or parking impacts. This would reduce the potential for parking or traffic impacts on the neighborhood and the small size and access from the street would also simplify enforcement. This alternative would allow multiple dog walking opportunities while maintaining protection for the more remote habitat that is contiguous with protected open space managed by other agencies and would provide options for those visitors who prefer a no-dog experience.

HOW THE ALTERNATIVES MEET THE OBJECTIVES

Objectives are specific goals that describe what GGNRA intends to accomplish by preparing a plan/EIS.

Objectives are specific goals that describe what GGNRA intends to accomplish by preparing a plan/EIS. These objectives come from a variety of sources, including NPS management policies, laws, and regulations. The objectives help develop alternatives for evaluation and public review. The internal scoping process yielded the following specific objectives for this planning process:

Visitor Experience and Safety

- Minimize conflicts related to dog use by providing a variety of safe, high-quality visitor use experiences, including areas where dogs are allowed.

Law Enforcement / Compliance with Dog Rules, and Park Operations

- Maximize dog walker compliance with clear, enforceable parameters in order to improve park operations and use of staff resources in managing dog walking.

Park Operations

- Provide adaptability and flexibility so that information gathered from monitoring can be used in future decision making based on estimated outcomes, including in new park areas.
- Ensure a safe and healthy working environment for park staff.
- Evaluate commercial dog walking, and if allowed, create and implement an enforceable policy.

Natural Resources

- Protect native wildlife and their habitat (including sensitive species and their habitat, and federally or state listed, unique, or rare species) from detrimental effects of dog use, including harassment or disturbance by dogs.
- Minimize degradation of vegetation, soil and water resources by dog use.
- Preserve opportunities for future natural resource restoration and enhancement.

Cultural Resources

- Preserve opportunities for future cultural resource restoration and enhancement.
- Protect cultural resources from the detrimental effects of dog use.

Education

- Build community support for the plan to maximize management of dog walking use.
- Increase public understanding of NPS policies.

During the modified choosing by advantages workshop team members from GGNRA compared each of the alternatives for each site to the objectives listed above. Some of the subtopics for each objective were not compatible, requiring team members to balance competing needs. After evaluating each alternative against each objective for each site, it was determined that all action alternatives met the objectives of this plan. Some of the action alternatives met the objectives better than others and the alternative that best met the objectives for the dog management plan was selected as the preferred alternative as described below.

ALTERNATIVE ELEMENTS ELIMINATED FROM FURTHER CONSIDERATION

During the alternatives development process, including revision and development of alternatives following public comment, several alternative elements were considered but eliminated from further consideration, as described below.

Additional Voice and Sight Control Areas and On-Leash Areas

Establishing VSCAs on trails throughout some of the GGNRA sites was considered but dismissed. Establishing VSCAs on park trails would create safety concerns for other park users since many trails are relatively narrow and have limited line of sight, which could inhibit use of areas by some visitors due to having to travel through a VSCA when using any trails wholly, or even partly, designated as VSCAs. There is also a higher likelihood of impacts to adjacent resources as off-leash dogs can more easily access habitat adjacent to trails than a dog walked on leash. Even if a trail is a wide, multi-use trail or fire road, a VSCA would still interfere with access by other users, and unless fenced, would allow impacts to adjacent habitat. For these reasons, VSCAs would not be established on park trails or fire roads. However, due to the consensus agreement by the Negotiated Rulemaking Committee, and the park's commitment to include the committee's consensus agreements in the range of alternative for analysis, a VSCA on a fire road/trail is being considered under alternatives C and E at Oakwood Valley (northern section of the Oakwood Valley Loop Trail). Additionally, a VSCA is located on a portion of the paved Battery Davis Trail (west) and the Funston Beach Trail North as part of the upland VSCA at Fort Funston. These trails are broad paved corridors that are generally wider than fire roads within GGNRA, which reduces safety concerns associated with narrow trails, as discussed previously. Allowing these trails to be a part of the upland VSCA gives dog walkers a continuous off-leash dog experience at Fort Funston.

A VSCA that would encompass all of Fort Funston, both beach and uplands, was considered but dismissed. Allowing dog walking in all areas does not meet the purpose of this final plan/EIS, which includes preserving and protecting natural resources, providing a variety of visitor experiences, improving visitor and employee safety, reducing visitor conflicts, and maintaining park resources and values for future generations. Specifically, providing a diversity of visitor uses at Fort Funston, including hiking, bird watching, equestrian activities, hang gliding, and others, precludes a VSCA throughout the area. Resource protection requirements also preclude a VSCA throughout the area.

Establishing a VSCA on East Beach at Crissy Field was considered but dismissed. Establishing a VSCA on East Beach would provide maximum access to off-leash dog walkers. However, in order to provide better access and visitor safety for multiple user groups, a key objective of this plan, only no dog walking (alternatives C and D) and on-leash dog walking (alternatives B and E) were the options considered for East Beach in the action alternatives.

During the alternatives development process, several elements were considered but eliminated from further consideration.

Establishing a VSCA within the majority of San Mateo lands was considered but dismissed. The Cattle Hill site was evaluated for voice and sight control, but accessibility is difficult, and the public access through the area is entirely on trails that would require fencing if the area was proposed for voice and sight control. Extensive restoration has also been completed at Cattle Hill and there is habitat for the mission blue butterfly on Sweeney Ridge, directly adjacent to Cattle Hill, and a strong likelihood that this habitat also exists at Cattle Hill. A VSCA in this area would not meet the purpose of preserving and protecting natural resources. The only other trail where voice and sight control is proposed is in Oakwood Valley, but to allow that use, a fence and double gates would be constructed. The VSCA on the northern section of the Oakwood Valley Loop Trail is being considered because it was part of the consensus agreement of the Negotiated Rulemaking Committee.

Sweeney Ridge, Milagra, and Mori Point were evaluated for VSCAs, but this option was dismissed because there is endangered species habitat immediately adjacent to the trails in these areas. Establishment of a VSCA at these sites would not meet the purpose of the final plan/EIS, which is to preserve and protect natural resources.

Small VSCAs, consistent with visitor and resource protection, are considered in three alternatives for Rancho Corral de Tierra (see table 4). Additional or larger VSCAs for Rancho were considered but dismissed due to resource-related concerns. A large VSCA north of the Farallone View School was considered, but the presence of habitat of a federally threatened species, the California red-legged frog, adjacent to the site and a report from the California Department of Transportation biologists that red-legged frogs were found in drainages to either side of this site eliminated this as an option since there is insufficient distance between the site and the habitat to provide a protective buffer. A proposed site in a previously disturbed area west of the intersection of Coral Reef and Sevilla Avenues in El Granada was also considered, but was found to contain wetland plant species and to have seasonal standing water. Placing any use in this area would violate Director's Order #77-1, Wetland Protection. In addition, habitat modeling performed in 2010 predicts a high likelihood of encountering threatened species in this area based on surrounding observations of California red-legged frogs and habitat suitability.

The majority of the upland areas at Rancho, except for Flat Top (a 3-acre bowl at a previously disturbed quarry site), were removed from consideration for VSCA use. Flat Top was originally considered but dismissed because the site would have required dog walkers to keep their dogs on leash on the approximately half-mile steep trail connecting the neighborhood to the VSCA site, the location was removed from the site's built edge and the park initially considered potential long-term restoration of this area. However, GGNRA received many public comments on both the draft plan/SEIS and proposed rule requesting off-leash areas in San Mateo County. GGNRA is generally unable to allow off leash on trails, as discussed previously in this chapter, which leaves most areas in San Mateo County off limits to a VSCA. The lands in San Mateo County are not coastal beaches nor landscaped former military sites, such as those in San Francisco and Marin counties. Flat Top is one of the only remaining areas that would meet basic voice and sight control requirements – it is not a trail, the area is already disturbed, and sensitive species have not been found in this area despite it being part of a broad critical habitat designation covering much of coastal California. Consultation with USFWS on this site as an off-leash area is ongoing to confirm no adverse effects before off-leash dog use would be allowed there. For these reasons, and in an effort to provide an off leash opportunity for dog walkers in San Mateo County, GGNRA removed this alternative from considered but dismissed and into the final plan/EIS preferred alternative. Parking at this site is under county jurisdiction and may be subject to future changes or restrictions. The VSCA at Flat Top would limit impacts on the neighborhoods and the visitor experience due to the location and topography. This site would require that dog walkers keep their dogs on leash on the approximately half-mile, steep trail connecting the neighborhood trailhead to the VSCA site. The adjacent, publically owned lands of McNee State Park, San Pedro Valley County Park, and the San Francisco Public Utility Commission watershed, together with the Rancho uplands, create a large area of relatively undisturbed, contiguous habitat, particularly important for large mammals. In order to provide the greatest protection for wildlife and habitat, dog walking on leash or in a VSCA was not considered for the upland portions of the Rancho site in the action alternatives, consistent with regulations prohibiting dog walking in San Pedro Valley County Park and the San Francisco watershed. Dog walking on leash is allowed in McNee Ranch State Park, adjacent to the lower areas of Rancho where on-leash dog walking and a small VSCA are proposed in the range of alternatives for Rancho. Limiting dog walking, including the VSCA, to the lower section of Rancho is consistent with the overall project goal of maintaining the integrity of the remaining, large expanses of contiguous habitat by restricting dog walking to areas near the park boundary, close to built areas and parking.

Additionally, the creation of a VSCA of a more significant size at Rancho would very likely increase traffic and create parking impacts in the Montara and El Granada neighborhoods. In the coastal area from Pacifica to Half Moon Bay, there are currently only three off-leash areas: two in Pacifica – a small section of beach at the end of Esplanade Drive and the half-acre Sanchez Dog Park and the Coastside Dog Park in Half Moon Bay - a small, fenced, volunteer-run site. Creation of a significantly larger VSCA at the Rancho site would be likely to draw dog walkers from communities beyond Montara and El Granada,

similar to the draw of popular dog walking sites in San Francisco such as Crissy Field and Fort Funston. Local residents supporting dog walking under voice control have expressed their support for off-leash access to the Rancho site, while many residents also express strong concerns about the potential for increased traffic and visitation in the Montara and El Granada neighborhoods now that Rancho is a public, NPS-owned site. Those impacts that would likely be even greater with the establishment of a multi-acre VSCA in this area.

On-leash Loop Trails

On-leash loop trails were considered for addition at Mori Point and Milagra Ridge, however, both options were dismissed because of the potential to adversely impact natural resources. For Mori Point, the Lishumsha Trail, which combined with Old Mori Trail could have created a loop trail, crosses San Francisco garter snake habitat. The park is aware of the potential issues related to other uses such as mountain bike son the Lishumsha Trail. The park will address appropriate use of the Lishumsha Trail in a separate, future plan. At Milagra, there is mission blue butterfly habitat directly adjacent to the narrow trail corridors which could have completed a loop trail experience. On-leash dog walking is not allowed on any narrow GGNRA trails that run through or are adjacent to mission blue butterfly habitat.

Leashes Longer than 6 Feet

In on-leash areas, a functional 6-foot leash must be attached to the dog and simultaneously held by the dog walker. The use of other types of leashes such as electronic leashes, remote training collars, and 12-foot leashes, in lieu of the 6-foot leash, were considered and dismissed from further consideration. These types of leashes would allow dogs to go further than 6 feet from the dog walker and would allow them to more easily enter into habitat area especially in locations where trails are narrow. Long leashes can also be problematic in high-traffic areas, including areas with cyclists and runners.

Fees

During the public comment period for the draft plan/EIS, commenters suggested requiring a daily, monthly, or annual fee at the park for dog walking. The fees collected could cover maintenance or restoration of the area, for example. NPS has considered but dismissed charging fees to all dog walkers. Dogs are allowed in NPS units servicewide under 36 CFR 2.15, and no fees are charged in other park units for dog use. GGNRA has noted that dog walking is an appropriate use of the park. What sets GGNRA apart is both the off-leash use, and the larger number of dogs at GGNRA, particularly the additional management concerns that arise from the walking of multiple dogs at one time. Therefore, NPS exercised its discretion to require a SUP for those who walk between four and six dogs. Permit fees from these permits will be used to support the costs of the permit program. Permit fees for particular off-leash activities and uses as part of a permit and training program could also be implemented under the monitoring-based management program should impacts to resources or the number or type of violations approach an unacceptable impact. Thus, while GGNRA is prohibited by law from charging entrance fees, fees collected pursuant to a permit would be a special use recovery fee, not an entrance fee.

Increase in Fines

During the public comment period for the draft plan/EIS, commenters suggested that fines for dog-related incidents should be increased. Fines for dog walking violations are not determined by the NPS, but are established in the Federal Magistrate Bail Schedule, which is set by the court system. Fines have been recently increased for repeat offenders. GGNRA will work with the Federal Magistrate to determine escalating fine schedules for violations as appropriate' however, GGNRA does not have the authority to set fines itself. For these reasons, an increase in fines has been dismissed from further analysis.

Time of Use Restrictions

Time-of-use restrictions (such as hour of day or day of week) were considered but dismissed for all but SUPs (required for those wishing to walk more than three dogs). One objective of the final plan/EIS is to maximize dog walker compliance with clear, enforceable parameters in order to improve park operations and use of staff resources in managing dog walking. Time-of-use restrictions create confusion among the public and lead to noncompliance with dog regulations. GGNRA briefly used time of use restrictions in limited areas in the 1970s and currently uses time-of-year restrictions in the Crissy Field WPA and Ocean Beach SPPA. However, the seasonal nature of the plover restriction has added to public confusion about dog walking regulations and public comment on the draft plan/EIS included suggestions to simplify the restriction by changing it from seasonal to year-round and eliminating time of use altogether. Historically, and up to present day, time of use restrictions have not been favored. In 1978, an evaluation from the GGNRA San Francisco Unit Supervisor noted a number of problems with dog management at Baker Beach, one of those being: "certain times of the day open to dogs, closed at all other times type of law is very confusing to the public…. Areas should either be designated open to dogs on leash or no leash or closed to dogs." Current law enforcement personnel have encountered similar public confusion at Crissy Field and Ocean Beach despite clear signage and frequent enforcement.

Other public comments on the draft plan/EIS suggested time of use restrictions for both on-leash and off-leash dog walking. However, during the 2012 visitor satisfaction survey, when respondents were asked how satisfied they would be if areas within GGNRA designated as VSCAs had time of use restrictions, 70 percent indicated they would not be satisfied or slightly satisfied. The remaining 30 percent of respondents indicated that they would be moderately satisfied to completely satisfied with time of use restrictions (NPS 2012a, 36). Additionally, areas and times suggested for time of use restrictions in public comments on the draft plan/EIS, such as early mornings and evenings, are typically when wildlife is more likely to be present. Concentrating dog walking at these times would be more likely to impact wildlife. Other land management agencies, including state and local agencies in various jurisdictions, have utilized time of use restrictions at various times of day to manage a variety of visitor experiences with mixed results. Although time of use restrictions can be difficult to enforce and are not a preferred management method, the park will allow this management concept to remain as an option for dog management in the future if monitoring efforts under the monitoring-based management plan determine that dog-related impacts to park resources are approaching an unacceptable level and some practical use of such can be used to avoid those impacts without creating further confusion. Time of use restrictions are proposed for use as a way to manage SUPs for walking four to six dogs during busy periods of day and week. NPS believes education around time of use for permit holders is likely more effective given that permits are issued individually, and have additional guidelines and safeguards.

Volunteer Law Enforcement

During the public comment period for the draft plan/EIS, commenters suggested that volunteers should be allowed to issue citations, should be on site to monitor and call enforcement when needed, and volunteer rescue crews could be used at Fort Funston. Suggestions provided by commenters for enforcement by volunteers would not be feasible per NPS Director's Order 7, Section 8.4, which states that the Volunteers in Parks Act of 1969 does not permit use of volunteers for law enforcement. The Volunteer in Parks Act explicitly states in Chapter 1, Section 8: "Some examples of duties a VIP should not perform include serving as backup on patrol, issuing citations…" Consequently, this has been dismissed from analysis.

Dog VSCA Certification Program

The City of Boulder Open Space and Mountain Parks in Colorado launched a voice and sight tag program in the summer of 2006 with goals to increase compliance with existing voice and sight rules and to

decrease dog-related conflict on Open Space and Mountain Parks-managed lands (City of Boulder 2011, *i*). A year after implementation of the program, the percentage of visitors complying with the voice and site control increased to about 40 percent in 2007. The same level of compliance (41 percent) still existed in 2010; therefore, compliance with the voice and site control requirement did not measurably increase after the first year of monitoring (City of Boulder 2011, 7). Compliance with the excrement removal requirement was generally low; just over 45 percent of the visitor parties complied with the excrement requirement in 2010 (City of Boulder 2011, 11). The monitoring study also found that the incidence of conflictive behaviors in 2010 returned to the 2006 pre-program level, suggesting that the program was not effective in decreasing conflict involving dogs on Open Space and Mountain Parks properties (City of Boulder 2011, 10 and 17).

A dog and/or dog walker training certification program for use in VSCAs similar to this initial Boulder tag program was considered but dismissed. This program would have required any dog walker who wanted to bring their dog to a VSCA to undergo a brief 15-minute education and certification program, which the park would oversee and which would require recertification every two years. This program was cost prohibitive and would have required substantial park staff time. Further, based on the above information, the program was not very effective in increasing compliance with the requirements for using off-leash areas.

However, an improved educational program in Boulder has been implemented with increased fine schedule and added classroom requirements with initial indications that it may be more successful; but final evaluation has not been completed. The proposed monitoring-based management program includes focused education and enforcement as the primary management response for noncompliance with a training and certification program as a secondary action, and would better achieve the purpose, need, and objectives of the final plan/EIS than this initial, earlier Boulder certification program. As stated in the section "Elements Common to All Action Alternatives," Boulder's program has been modified to include off-leash training certification through participation in classroom instruction; and, similar educational program elements could be used as part of the monitoring-based management program at GGNRA.

Therefore, a dog and dog walker training certification program could be used in the future. GGNRA has supported dog training workshops in collaboration with the San Francisco SPCA and a local dog group in the past. The park would look into increasing such opportunities, again in collaboration with local dog groups and humane societies such as San Francisco SPCA, the Marin Humane Society, and the Peninsula Humane Society.

Voice and Sight Control Dog Walking in More Areas than "No Action" Alternative A

An alternative proposing voice and sight control in more areas than the no-action alternative (alternative A) was considered but dismissed. NPS *Management Policies 2006* Section 1.4.3 (NPS 2006a, 10-11) describes the affirmative obligation to conserve and provide for the enjoyment of park resources and values. It states, in part, "The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. This mandate is independent of the separate prohibition on impairment and applies all the time with respect to all park resources and values, even when there is no risk that any park resources or values may be impaired. NPS managers must always seek ways to avoid, or to minimize to the greatest extent practicable, adverse impacts on park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impact does not constitute impairment of the affected resources and values." The NPS carefully evaluated each alternative for its adherence to conservation of park resources and values. Based on the best professional judgment of park staff, visitor use surveys, public comment, and the draft plan/EIS impact analysis, it became clear that

allowing the current level and type of use under alternative A, which provides for the greatest amount of dog walking use, or increasing that use in additional areas, would not meet this mandate.

This project is unique in that adverse impacts to park resources and values are currently occurring as a result of alternative A and are therefore described as "continued" because they are occurring and will continue to occur without action. These impacts are in part documented by numerous pet-related incident reports and citations. Under alternative A, an undefined policy never promulgated as enforceable regulations for dog activities within the park compromises the visitor experience and natural resources of the park as well as the ability of future generations to enjoy the park. Dog walking activities would continue within the park as they have under the 1979 Pet Policy (appendix A) and 36 CFR 2.15 and 7.97(d) (appendix D) and the GGNRA Compendium. The lack of specificity and enforceability of the 1979 Pet Policy would result in long-term, adverse impacts: degradation of vegetation; disturbance to native wildlife and their habitat as well as listed species; detraction from visitor experience; disturbance to cultural resources; and compromised visitor health and safety within the park. Dog activities under the no-action alternative continue to threaten other special-status species and their habitat, including the tidewater goby, coho salmon, steelhead trout, bank swallow, and many others. Listed vegetation species, including the mission blue butterfly, Presidio manzanita, Marin western flax, and San Francisco lessingia, are a few of the many federally listed species that would continue to be adversely affected by the no-action alternative. The no-action alternative does not provide protection for these listed species, nor is it consistent with the recovery plans for these species, including the San Bruno elfin butterfly, mission blue butterfly, northern spotted owl, western snowy plover, San Francisco garter snake, tidewater goby, and California red-legged frog. Additionally, the 1979 Pet Policy that would continue as a result of the no-action alternative would be inconsistent with NPS regulations and would continue the current confusion, controversy, and conflict over the status of dog walking in the park. Finally, adverse impacts to park operations and health and safety would continue to occur as a result of alternative A.

It was precisely these impacts to park resources and values, including visitor experience, which led to this planning effort. The no-action alternative (alternative A), which provides for the highest level of dog walking under unregulated voice control, does not meet the purpose and need for this final plan/EIS. It would not preserve and protect natural and cultural resources and natural processes, would not provide for a variety of visitor experiences, would not improve visitor and employee safety, would not be compliant with the FRA, would not reduce user conflicts, and would not maintain park resources and values for future generations. The need for this final plan/EIS directly addresses the fact that alternative A, or use greater than alternative A, would compromise park resources and values to the extent that "without action, those resources and values in some areas of the park might not be available for enjoyment by future generations."

Number of Dogs per Dog Walker

NPS received multiple public comments on the draft plan/EIS, the draft plan/SEIS, and the proposed rule regarding the appropriate number of dogs allowed per dog walker. Some commenters expressed support for limiting the number at six dogs with strict guidelines. Other commenters, including some dog walkers, expressed concern that public health and safety would be adversely impacted by allowing more than three dogs per dog walker (commercial or private), with some noting that four or more dogs could be hard to control. Some commercial dog walkers noted the potential economic impacts to their businesses as a result of limiting the number of dogs to a maximum of six, while other commenters requested that commercial dog walking not be allowed at all.

More than Six Dogs per Dog Walker. NPS considered but dismissed allowing more than six dogs for commercial and private dog walkers, which would not meet the purpose, need, and objectives for the plan.

NPS, in establishing a threshold number, was concerned first and foremost with resource protection and visitor experience and safety, two key objectives of the plan/EIS. NPS questions whether a dog walker could consistently control more than six dogs under voice and sight control, particularly in an NPS area where there is a primary mandate of resource protection and a secondary mandate of visitor (not commercial) experience. NPS was unable to find literature supporting the idea that more than six dogs would not damage park resources or impact visitor experience and safety, or put another way, would provide both resource protection and visitor experience and safety. Based on public comment, feedback from the discussions of the Negotiated Rulemaking Committee for dog management, park staff observations and research, and law enforcement experience, NPS believes that allowing more than three dogs without a permit system, or more than six dogs total could negatively impact visitor experience and safety, and would not meet the purpose of and need for the plan/EIS. Consequently, the preferred alternative requires dog walkers with more than three dogs to obtain a SUP (see appendix F for permit conditions and restrictions) which would have an upper limit of six dogs. Dog walking compliance, including compliance with SUPs and impacts to resources, are monitored through the monitoring-based management program. Where that monitoring finds non-compliance with SUP conditions, permit restrictions such as individual permit revocations, time of use restrictions or number of permits issued, may be instituted as mitigation.

NPS also seeks consistency with adjacent jurisdictions. Since a consistent number of dogs would be easier to understand and enforce, GGNRA researched other local and non-local government entities that have addressed this issue. Two local government entities, Marin County Open Space District and the East Bay Regional Park District, limit numbers to six dogs per dog walker. The City of San Francisco recently passed an ordinance in 2013 regulating commercial dog walking that would require a permit for four to eight dogs, liability insurance, and proof of training despite their Animal Care and Control office recommending a limit of six. The ordinance did not address private dog walkers. The Presidio Trust currently has an interim rule that includes permit conditions the same as GGNRA's proposed dog management rule. This interim rule will remain in effect until the final special regulation for dog walking in GGNRA is adopted. At that time the Presidio Trust expects that it will adopt a final rule following its own environmental process with public input and comment. Multiple entities outside the San Francisco Bay Area have also limited the number of dogs for commercial dog walkers to no more than six, including Boulder County, Colorado Open Space and Mountain Parks, which addressed dog walking in a comprehensive management plan. Those jurisdictions with a primary resource protection and recreation mandate settled on six as the appropriate number.

Comments in favor of no numerical restrictions or a higher number primarily described the economic impacts commercial dog walkers would experience with a numerical limit. NPS did consider these impacts. Socioeconomic impacts to commercial dog walkers was found to have negligible impacts to the local economy, and would affect less than 1/100 percent of the over 2.5 million jobs in the San Francisco metropolitan statistical area. This impact topic was consequently dismissed.

Finally, NPS received numerous public comments on the draft plan/EIS urging the park to prohibit commercial dog walking altogether instead of limiting the number of dogs allowed. These comments noted that commercial uses of parks are highly regulated, and while commercial uses of parks typically address some aspect of visitor experience, commercial dog walking does not. GGNRA agrees that commercial park uses, particularly those that do not provide visitor services, deserve greater scrutiny than commercial services for visitors, and cannot trump the use of the park by the general public. However, one objective of the plan/EIS is to evaluate commercial dog walking, and if allowed, create and implement an enforceable policy. Therefore, the range of alternatives evaluates allowing and prohibiting commercial dog walking, and if allowed, limiting to three dogs per dog walker with no permit system or four to six dogs with a permit system. If the preferred alternative, or other alternative allowing commercial dog walking, is ultimately selected, GGNRA would regulate commercial dog walking

through a special regulation pursuant to NPS authority to promulgate special regulations under the NPS Organic Act (54 USC 100101(a) et seq.). If so, commercial dog walking would be subject to the strict permitting protocol described above if more than three dogs are allowed, and with compliance evaluated through the monitoring-based management program (see the "Monitoring-based Management Program" section for more details).

No More than Two or Three Dogs per Dog Walker. Based on public comment, the NPS considered limiting the number of dogs off leash to two dogs per dog walker; however, this was dismissed. As stated above, NPS considered resource protection, visitor experience and safety, and the regulations of adjacent jurisdictions in determining the number of dogs that would be allowed per dog walker. At some park sites, no more than three dogs per dog walker would be allowed to further protect park resources and visitor safety due to the conditions at the site. However, some sites would allow dog walking for four to six dogs with an NPS-issued permit. The proposal to allow more than three dogs per walker through a permit generally aligns with dog walking regulations in adjacent public land management agencies, thus not increasing impacts on adjacent public lands. Although NPS is not required to maintain the same regulations as city and county parks, consistency with other adjacent areas was a consideration in development of number of dogs allowed. The number off-leash at any one time will be subject to compliance with both SUP conditions and the monitoring and management program. If it is found that dog walkers with four to six dogs are unable to manage them all off-leash under this special regulation, limits may be implemented to allow only two to three off-leash at any one time.

Permitted Dog Walking at Additional Sites. Based on public comments, NPS considered but dismissed allowing permitted dog walking for four to six dogs on additional sites within GGNRA. Action alternatives C, E, and F (preferred alternative) allow permitted dog walking at sites in Marin County (Alta Trail, Rodeo Beach, and Fort Baker) and San Francisco County (Fort Mason, Crissy Field, Baker Beach, and Fort Funston). These sites would provide dog walkers with up to six dogs with access to trails, upland areas, grassy areas, and beach, grass, and upland VSCAs within the two counties, providing a variety of experiences for both on- and off-leash walking. When determining areas that would be appropriate for permitted walking, NPS again considered resource protection, visitor experience and safety, and the regulations of adjacent jurisdictions. Permitted dog walking is allowed in areas where off-leash dog walking is allowed (e.g., Rodeo Beach, Crissy Field) and adjacent to developed areas where larger numbers of dogs will already likely be present, in part to minimize conflicts in other areas. It is also allowed at the Alta Trail, where there is currently high use among commercial dog walkers. Permitted dog walking was considered but dismissed in San Mateo County. The character of the lands in San Mateo generally do not lend themselves to permitted dog walking as they are not landscaped former military sites or open coastal beach areas, although trails were not immediately dismissed from consideration for permitted dog walking; see for example the Alta Trail. Alta Trail does require that all dogs be on leash, however, thereby protecting native plant communities and wildlife habitat—and specifically protecting habitat for the federally listed mission blue butterfly, which is consistent with the treatment of mission blue butterfly habitat throughout GGNRA. The on-leash designation would also limit the potential for dog/coyote interaction. In San Mateo several trails were evaluated for permitted dog walking. Public comments indicated a concern about congestion in the San Mateo area. Parking is limited in areas in San Mateo and several areas are heavily used by bicyclers and equestrians. Limiting dog walkers to three dogs would reduce congestion from both foot and vehicle traffic. Areas evaluated for permitted dog walking in San Mateo included the following: Sneath Lane is paved, but parking is limited, there is low commercial use, and there are bikes that descend rapidly on the hill, creating safety issues between cyclists and large groups of dogs. Milagra Ridge Road is also paved, but there are only four parking spots, and there is only an access easement, without an agreement regarding enforceability, which would introduce a higher use without enforceability. The Deer Creek to Clipper Ridge Trail is currently designated no dogs in the preferred alternative to allow for a mix of visitor uses. The Alta Vista trail does not allow dogs because of core contiguous habitat, and the lands it connects to are state parks which do not allow dogs, so there is no

logical terminus. San Pedro Road has limited parking, and sensitive resources. It is not crowded, but there is multiple use, and it is next to the equestrian center, so it would not be compatible with four to six dogs. Farrallone Elementary School to 2nd Street is a trail often used by school children, and would be inappropriate for large groups of dogs. Finally, the San Vicente loop is a gravel road, and wide, which could be compatible with permitted dog walking, but there is a notable amount of equestrian use throughout the lower trail, and some in the upper trail, which would not be compatible with permitted dog walking. Overall, NPS looked at safety, demand, parking availability, existing use patterns, visitor experience, and sensitive resources in determining that permitted dog walking in San Mateo County should be dismissed as an alternative element.

"No Action" (Alternative A) which Assumes Compliance

Also considered but dismissed is an alternative that would be a version of alternative A that assumes compliance and includes increased education, outreach, and enforcement, the monitoring-based management program, the VSCA guidelines, and permitted dog walking for visitors with up to 6 dogs. Instead, alternative E was revised to represent the greatest level of access for dog walkers, including incorporating all elements of the 1979 Pet Policy, which would meet the purpose, need, and objectives of the plan. The 1979 Pet Policy, as a whole, would not meet the purpose or need of the plan, and fails to meet virtually all of the plan's objectives, even assuming compliance, increased education and enforcement, VSCA guidelines, and a monitoring-based management program. A primary reason for this failure is the geographic scope of the 1979 Pet Policy, which opens many *entire* sites to off-leash dog walking with no restrictions on the areas of use within the sites, including the primary dog walking areas of Fort Funston, Ocean Beach, and Crissy Field. NPS received many public comments complaining that dog use precluded their enjoyment of these and other areas. Commenters included visitors with a fear of dogs, concerned parents whose children had been playfully attacked or knocked over by dogs, picnickers whose lunches had been taken, visitors who were unable to birdwatch due to dogs chasing birds, hang-gliders and equestrians attacked by dogs, visitors who had stepped in dog excrement, elderly visitors who no longer visited the park because of a fear of being attacked or knocked over and injured, as well as visitors with disabilities, such as seeing-impaired or blind individuals with guide dogs, whose highly trained dogs had been attacked by off-leash dogs resulting in their complete preclusion from the area. Because the 1979 Pet Policy opened many primary visitor areas to off-leash dog walking with no option for balance of user groups afforded by providing on-leash or no dog areas within the sites, these areas would fail to provide a variety of visitor experiences or be FRA compliant. Taking into account the overall tenor of these and other public comments, law enforcement statistics and other studies, the balance NPS seeks to achieve by allowing a multiplicity of visitor experiences would not be achieved by opening entire areas to off-leash dog walking, which precludes many other legitimate park visitors.

The 1979 Pet Policy also opened many trails to both on and off leash. Although all the action alternatives considered many trails for on-leash dog walking, as well as one trail for off-leash use, it was generally found that off-leash dog walking on trails would not meet the purpose, need, and objectives of the plan. Many of the trails in GGNRA are curvy, hampering the line of sight requirement for voice and sight control. Because many types of visitors use trails, and trails serve as access points to specific areas within a site, allowing off-leash use on trails could also preclude other users wishing to visit areas accessed by those trails. In contrast, a VSCA is intended to be a specific, contained geographic area, which other visitors may avoid while still having reasonable access to nearby portions of a site. In considering trails appropriate for off-leash dog walking, the Negotiated Rulemaking Committee was itself only able to identify one area, the northern section of the Oakwood Valley Loop trail, which has been considered in alternatives C and E.

Finally, there are also resource concerns associated with dog walking, both on and off leash, which are amplified in off-leash areas where there are few or no strategic geographic restrictions for protection of

sensitive species and habitat (i.e., the off-leash sites as described in the 1979 Pet Policy). For information on the types of impacts that may occur from dog walking, even where there are restrictions on areas of use and where compliance is assumed, please see chapter 4.

In short, opening entire sites and trails to off-leash dog walking, even assuming compliance, precludes other visitor uses, would not be FRA compliant, would adversely impact natural and cultural resources, and does not meet the purpose and need of the plan nor any of the planning objectives. Accordingly, alternative E allows the most voice- and sight-control dog walking in areas contained in the 1979 Pet Policy that the NPS believes, in its best professional judgment, could be allowed while continuing to meet its mandate to conserve park resources and values, as well as the purpose, need and objectives of the plan.

New Lands

In the draft plan/EIS, the four action alternatives included management options for new lands not already included in the draft plan that might come under GGNRA management in the future. Rancho Corral de Tierra, acquired during the final stages of development of the draft plan/EIS, was addressed programmatically under new lands in that document, because the baseline studies, needed to allow a site-specific evaluation of dog walking regulations, were not completed in time to allow inclusion of the site in the draft plan/EIS. However, since the release of the draft plan/EIS, Rancho Corral de Tierra was transferred to the NPS, has been under NPS management per 36 CFR 2.15, for almost two years, and park staff conducted on-site resource surveys, allowing the site specific treatment of Rancho Corral de Tierra in the draft plan/SEIS. Consequently, it was determined that a programmatic evaluation of dog walking for new lands is now outside the scope of this plan. Therefore, this topic was dismissed from the final plan/EIS.

Transfer Land Back to the City of San Francisco

In response to public comments, NPS considered but dismissed transferring GGNRA land back to the City of San Francisco. Historic dog walking on GGNRA lands is discussed in the section “Land Use Prior to Park Acquisition” in chapter 1. The deeds for the lands transferred from the City to the NPS state: “To hold only so long as said real property is preserved and used for recreation and park purposes.” These documents include no additional specificity as to what uses constitute recreation. This final plan/EIS has several objectives, including providing a variety of visitor experiences, improving visitor and employee safety, reducing user conflicts, and preserving and protecting natural and cultural resources and natural processes. These objectives are based in part on the Negotiated Rulemaking Committee’s consensus agreement of what should be the guiding principles the dog management plan, and they align with both the park’s enabling legislation and specific agreements between NPS and the City of San Francisco regarding land acquisition. GGNRA has received many public comments from recreational users requesting that dog walking be better managed and the use limited to specific areas of the park, in part because these users feel they can no longer use areas where dogs are present due to conflicts with dogs and dog walkers. Were GGNRA to ignore this conflict, it would violate the intent of the land transfer deeds, whose purpose was to provide for recreation for many types of users, not just one specific group. The dog management plan continues to recognize dog walking as a valid activity within the park, and in fact allows dog walking on approximately one third of all park beach and trail miles. At the same time, GGNRA must continue to preserve its resources for the enjoyment of future generations, in accordance with its own enabling legislation and the NPS Organic Act.

SUMMARY—CONSISTENCY WITH SECTIONS 101(B) AND 102(1) OF NEPA

The NPS requirements for implementing NEPA include an analysis of how each alternative meets or achieves the purposes of NEPA, as stated in Sections 101(b) and 102(1). Each alternative analyzed in a NEPA document must be assessed as to how it meets the following purposes:

The NPS requirements for implementing NEPA include an analysis of how each alternative meets or achieves the purposes of NEPA.

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
2. Ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.
4. Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.
5. Achieve a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities.
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

CEQ Regulation 1500.2 establishes policy for federal agency implementation of NEPA. Federal agencies shall, to the fullest extent possible, interpret and administer policies, regulations, and public laws of the United States in accordance with the policies set forth in NEPA (Sections 101(b) and 102(1)); therefore, other acts and NPS policies are referenced as applicable in the following discussion.

1. Fulfills the responsibilities of each generation as trustee of the environment for succeeding generations.

   Alternatives B through F provide increased protection to special-status species by establishing dog management guidelines that restrict dog walking from sensitive habitats, require on-leash dog walking, or establish specific areas where dog walking under voice and sight control would be allowed. Limitations on dog walking access would not only benefit special-status species when compared to the no-action alternative, but would also provide protection to other resources including, vegetation, wetlands, and other wildlife.

   Alternative B reflects the NPS-wide approach to dog walking as defined in NPS policy and regulations. Management conditions would also be regulated by the GGNRA Compendium, which can establish park-specific actions to establish closures and public use limits to protect cultural and natural resources. By requiring on-leash dog walking, this alternative would protect natural resources including wildlife, vegetation, and special-status species, as well as soils and water quality. If impacts to the resources occur, impacts would be limited to the defined trail/roads/beaches and the 6-foot-wide corridor adjacent to trails and roads. Alternative B would fully meet the purpose of fulfilling the responsibilities of each generation as trustee for the environment.

   Alternative C balances a variety of dog walking opportunities with areas where dogs are not allowed within each of the three counties containing park sites. Alternative C emphasizes recreation opportunities and experiences for multiple user groups, including dog walkers, while considering visitor and dog safety and minimizing conflict between dog walkers and other user

groups. This alternative also restricts dogs from some areas in order to provide a no-dog experience for some visitors and also protect significant natural resources. Alternative C would include VSCAs in designated areas. This alternative has been designed to protect natural resources including sensitive species, wildlife, vegetation, and soils, and water quality. Dog walking would be restricted from sensitive habitats, such as the lagoons, creeks, and other wetland areas that contain special-status species. On-leash dog walking would be required in most areas to restrain dogs from entering areas that have not been previously impacted. Impacts would generally be limited to selected trails/roads/beaches and adjacent 6-foot-wide corridor. The location of the VSCAs would be located away from any sensitive species or habitats. Consequently, alternative C would also fully meet the purpose of fulfilling the responsibilities of each generation as trustee of the environment.

Alternative D would offer the greatest protection of natural resources, including sensitive species/habitats, wildlife, vegetation, soils, and water quality, among the action alternatives. Alternative D would also allow recreation opportunities and experiences for multiple user groups, including dog walkers. Alternative D offers the least amount of area to dog walkers. Of the alternatives that provide off-leash dog walking areas (alternatives A, C, D, E, and F), alternative D offers the least area for VSCAs. On-leash dog walking would be required in most areas open to dog walking under this alternative, in order to restrain dogs from entering undisturbed areas or impacting other users. Alternative D has the most amount of area closed to dog walking when compared to the other action alternatives. Consequently, alternative D would also fully meet the purpose of fulfilling the responsibilities of each generation as trustee of the environment.

Alternative E would offer recreation opportunities and experiences for multiple user groups, including dog walkers; however, this alternative would allow more opportunities for dog walkers to access portions of GGNRA than other alternatives while still providing protection of resources. Even though alternative E offers the most area for dog walking of all the action alternatives, this alternative would fully meet the purpose of fulfilling the responsibilities of each generation as trustee of the environment. Alternative E would protect special-status species, wildlife, and vegetation. VSCAs would be established in areas that would avoid impacts to sensitive species and habitats. Like the other action alternatives, alternative E would allow on-leash dog walking on selected trails/roads/beaches. By restraining dogs on leash in many of the areas open to dog walking under this alternative, and confining off-leash use to specific areas with specific guidelines, impacts would be reduced to the trail/road/beach and the 6-foot-wide corridor adjacent to the on-leash areas. In many cases, areas for on-leash dog walking and VSCAs have been previously disturbed.

Alternative F offers recreational activities and resource protection, and represents the preferred alternative for each site. This alternative would fully meet the purposes of fulfilling the responsibilities for each generation as a trustee of the environment. Alternative F would provide protection for special-status species, wildlife, and vegetation, while still allowing for recreational activities, including off-leash dog walking. On-leash dog walking would be required in most areas to restrain dogs from entering areas that have not been previously impacted. Impacts would generally be limited to selected trails/roads/beaches and adjacent 6-foot-wide corridor. The location of the VSCAs would be located away from any sensitive species or habitats.

Alternative A would not fully meet the purpose of fulfilling the responsibilities of each generation as trustee for the environment. The no-action alternative is based on a combination of NPS regulations, the 2005 federal court decision (*U.S. v. Barley*, 405 F.Supp.2d 1121 (N.D. Cal. 2005)), and the 1979 Pet Policy. Because dog walking regulations are routinely ignored by visitors at many park sites, on-the-ground activities sometimes vary widely from posted regulations. These differences are attributable in part to changes in dog walking policies over the

years, court decisions regarding dog walking in GGNRA, and public confusion due to both those changing circumstances and variable levels of enforcement. Off-leash dog walking currently occurs at many of the sites. Dogs enter areas where sensitive species or habitats may occur. Dogs also frequently go off the trails or roads and create impacts to soils and vegetation through compaction, trampling, and nutrient addition. Under the no-action alternative, dog walking activities would remain the same and adverse impacts to vegetation, wildlife, special-status species, soils, and water quality would continue unregulated and unmitigated.

2. Ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings.

   Alternatives B, C, D, E, and F would fully meet the purpose of ensuring for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings. The action alternatives would increase safety by minimizing visitor conflicts and dog-related injuries. Visitor conflicts and injuries are expected to decrease since the new dog management regulations would be clear to all visitors and would be enforced by law enforcement staff. Requiring on-leash dog walking in most areas open to dog walking would also decrease visitor conflicts and injuries since dog walkers would have more control over their pets. Additionally, dog walking under voice and sight control would be restricted to designated areas that could be easily avoided by those visitors who do not prefer dogs. The action alternatives would require all dog walkers to clean up dog waste. Together with the limit on the number of dogs allowed per dog walker, and the specific requirement for dogs to be on leash or under very specific voice control, this would greatly reduce dog waste and nutrient additions to the soil. It is assumed that leash control and/or regulated voice and sight control would reduce dog waste and nutrient addition in comparison to the current, unregulated voice control status because owners would be in closer contact with their dogs and presumably would be more likely to comply with cleanup regulations. The reduction of pet waste would reduce health and safety issues associated with dog waste and also improve the aesthetics and cultural landscape of the park.

   Alternative D would best meet this purpose when compared to the other action alternatives, since alternative D is the most restrictive of dog walking, allowing the least amount of both on-leash dog walking and dog walking under voice and sight control. Since this alternative is the most restrictive, fewer conflicts and dog-related incidents may occur. Additionally, dog waste would be further reduced. Alternative E would meet this purpose, although to a lesser degree than the other action alternatives. Alternative E would allow the most on-leash dog walking and dog walking under voice and sight control but may have a greater risk of visitor conflicts and safety issues.

   Under the monitoring-based management program, park staff would regularly monitor dog walking activities at the park sites to ensure that visitors with dogs are in compliance with new and existing regulations, including picking up pet waste, not going outside of on-leash areas or VSCAs, as well as monitoring for related impacts on vegetation, wildlife, and special-status species damage. Where noncompliance over a period of time is observed, multiple, targeted management strategies would be initiated to bring compliance back to acceptable levels.

   Alternative A would not fully meet the purpose of ensuring for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings. Dog walking regulations would continue to be unclear to visitors and would continue to create visitor and dog conflicts. Off-leash dog walking would continue throughout areas, many with high visitor use and multiple user groups, which increases the risk of dog-related injuries. Unkempt dog waste would also continue to be a problem, which would increase health and safety concerns and decrease the aesthetic and cultural landscape of the park.

3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.

   Alternatives B, C, D, E, and F would meet the purpose of attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences. All action alternatives would continue to allow a wide range of visitor use opportunities. On-leash dog walking and dog walking under voice and sight control would be allowed within designated areas. Additionally, some areas would prohibit dog walking, which would allow visitors who do not prefer dogs to have a no-dog experience at the park. Other visitor uses at the park including hiking, biking, running, birding, equestrian use, board sailing and hang gliding would continue. Eliminating dog walking or requiring either on-leash dog walking or voice and sight control in clearly defined areas with specific guidelines in sites where a variety of visitor experiences occur, would reduce risks to health and safety. The action alternatives have been designed to allow a variety of visitor experiences of the area without degradation of important resources including special-status species, wildlife, and vegetation. Alternative D would best meet the purpose because it is the most protective of the resources and would offer the least amount of area for dog walking activities. Alternative E would also meet the purpose by allowing the most area for dog walking, while still protecting resources. Alternative C is the most balanced of the alternatives in terms of offering a variety of visitor experiences and protection of resources. Alternative F would meet this purpose because it would allow for resource protection while still providing areas for both no-dog experiences and dog walking, including VSCAs that would be placed away from sensitive resources. All action alternatives would reduce multiple visitor use conflicts and provide protection of the environment.

   Alternative A would not fully meet the purpose of attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences. Under the no-action alternative, unregulated off-leash dog walking would still occur throughout areas, some with a high variety of visitor experiences, creating visitor conflicts and dog-related injuries. Dog walking regulations would remain confusing, which would also contribute to visitor conflicts and dog-related injuries. In addition, off-leash dogs would enter areas where sensitive species or habitat exists, trample vegetation, compact soils, or chase wildlife, all of which would degrade the natural environment.

4. Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.

   The action alternatives (alternatives B, C, D, E, and F) would fully meet the purpose of preserving important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice. Allowing on-leash dog walking and dog walking under voice and sight control with strict guidelines and within designated areas would be expected to result in a decreased potential for trampling and ground disturbance of sensitive cultural resources. The physical restraint of dogs would prevent dogs from entering important cultural resource areas. In addition the VSCAs would be established in areas away from known cultural resources at the park. To preserve cultural resources, dog walking would also be prohibited in some areas, including the Batteries to Bluffs Trail and the Battery Crosby Trail north of Baker Beach within the Presidio National Historic Landmark (NHL), where a number of sensitive historic structures occur. Alternative D would be the most protective of the resources and would best meet the purpose when compared to the other action alternatives. Alternative E would fully meet this purpose, but to the least extent when compared to the other action alternatives, since alternative E would allow the most dog walking opportunities. As described above, the alternatives have been designed to protect natural resources including sensitive species, wildlife, vegetation, and soils, and water quality.

The action alternatives would allow on-leash dog walking on selected trails/roads/beaches. By restraining dogs on leash, impacts would be reduced to the trail/road/beach and the adjacent 6-foot-wide corridor. In most cases, areas for on-leash dog walking are on fire roads and previously used trails. VSCAs would be established in areas that would avoid impacts to sensitive species and habitats.

Alternative A would not fully meet the purpose of preserving important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice. Currently ground disturbance by dog walking, specifically under voice control is damaging to cultural resources at sites such as Fort Funston and structures within the Presidio NHL. Under the no-action alternative, dog walking under voice control could continue in areas that would damage the cultural resources.

5. Achieve a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities.

Balancing population and resource use under the final plan/EIS would include protecting the resources unimpaired for the enjoyment of present and future generations and providing access for visitors to experience the natural resources of the park. NPS *Management Policies 2006* states that the enjoyment that is contemplated by the *Organic Act* is broad; it is the enjoyment of all the people of the United States and includes enjoyment both by people who visit parks and by those who appreciate them from afar. It also includes deriving benefit (including scientific knowledge) and inspiration from parks, as well as other forms of enjoyment and inspiration. Congress, recognizing that the enjoyment by future generations of the national parks can be ensured only if the superb quality of park resources and values is left unimpaired, has provided that when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant. As discussed above, alternatives B, C, D, E, and F would provide opportunities for on-leash dog walking and dog walking under voice and sight control, as well as opportunities for a no-dog experience at the park, all of which, when compared to the no-action alternative, would benefit the natural and physical resources at the park. In addition, the action alternatives would provide a variety of visitor experiences that would all contribute to a high standard of living. All of the alternatives evaluated would allow some level of access to the park by both dog walkers and visitors who do not prefer dogs, which would contribute to the sharing of these amenities. As visitation to the park increases and the population of the area continues to increase, having clearly defined areas with designated dog walking regulations under the action alternatives would contribute to the protection of the park's natural and physical resources.

Given this, all the action alternatives would fully meet this purpose because each action alternative would provide the public access and ability to share the park's physical amenities and would protect the resources so that they would be available for future generations. Protection is evident both in how areas were chosen for level and type of use, and by the implementation of the monitoring-based management program. Park staff would regularly monitor dog walking activities at the park sites to ensure that visitors with dogs are in compliance with new and existing regulations, including picking up pet waste, not going outside of on-leash areas or VSCAs, as well as monitoring for vegetation, wildlife, and special-status species damage. Where noncompliance over a period of time is observed, multiple, targeted management strategies would take effect to bring compliance back to acceptable levels.

Alternative D would meet this purpose to the highest degree because it is the most protective of the resources, while still offering opportunities for on-leash dog walking and dog walking under voice and sight control. Alternative E would also meet this purpose, but to the least extent when compared to the other action alternatives. Alternative E allows the greatest amount of area for

dog walking under voice and sight control. To ensure that resources are protected, VSCAs would be established away from sensitive areas, and in certain cases barriers would separate VSCAs from visitors in adjacent areas. On-leash dog walking would be required in designated areas to minimize impacts to undisturbed vegetation, soil, and wildlife.

Alternative A would not fully meet the purpose of achieving a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities. Under the no-action alternative, dog walking regulations would continue to be unclear to visitors. Dog walking would continue to occur in restricted areas or with insufficient controls and would continue to adversely impact other user groups and the park's natural and physical resources. Although visitors would have the opportunity for dog walking at the park, resources would continue to be depleted. Without higher protection of resources and clear dog management regulations, these amenities would not be available for the enjoyment of future generations.

6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

   For the reasons discussed above, the action alternatives (alternatives B, C, D, E, and F) would enhance the quality and protect the park's biological and physical resources. Alternative D would provide the greatest protection of these resources since it would allow the least amount of dog walking when compared to the other resources. Alternative A would not meet the purpose of enhancing the quality of renewable resources. Under the no-action alternative, dog walking would continue to contribute to the adverse impacts to the park's resources. The second purpose, "approach the maximum attainable recycling of depletable resources," is less relevant to the dog management plan, as it is geared toward a discussion of "green" building or management practices. There would be no construction related to the no-action alternative (alternative A), so this purpose would not apply. The action alternatives would involve the installation of new signage throughout the park stating the dog walking regulations for each site, and some construction of fencing or barriers. Environmentally appropriate design standards and materials would likely be used to minimize impacts to depletable resources.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The NPS is required to identify the environmentally preferable alternative in its NEPA documents for public review and comment.

The NPS is required to identify the environmentally preferable alternative in its NEPA documents for public review and comment. The NPS, in accordance with the U.S. Department of the Interior policies contained in the Department Manual (515 DM 4.10) and CEQ's Forty Questions, defines the environmentally preferred alternative (or alternatives) as the alternative that best promotes the national environmental policy expressed in NEPA (Section 101(b)) (516 DM 4.10). The CEQ's Forty Questions (Q6a), and the U.S. Department of the Interior NEPA regulations (43 CFR 46.30) further clarify the identification of the environmentally preferable alternative stating, "this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources."

The environmentally preferable alternative was selected during the choosing by advantages meeting for each of the 22 sites. The following discussion identifies the environmentally preferable alternative for each site and the rationale to support the decision.

Stinson Beach

Alternative D was chosen as the environmentally preferable alternative. Alternative D would not allow dogs at the site. It provides protection of the dunes area and the creek adjacent to the parking lot that has been restored.

Homestead Valley

Alternative D was chosen as the environmentally preferable alternative. Alternative D would not allow dogs at the site. Alternative D would provide the most protection for the contiguous habitat, with little fragmentation, for the northern spotted owl and a rare native grassland plant.

Alta Trail / Orchard Fire Road / Pacheco Fire Road

Alternative D was chosen as the environmentally preferable alternative for Alta Trail/Orchard Fire Road/Pacheco Fire Road. No dogs would be allowed on the Alta Trail, Orchard Fire Road, or the Pacheco Fire Road. Alternative D provides the most protection for sensitive species, adjacent habitat for the mission blue butterfly and contiguous habitat in the area.

Oakwood Valley

Alternative D was chosen as the environmentally preferable alternative for Oakwood Valley. On-leash dog walking would be allowed on the Oakwood Valley Fire Road to the junction with the Oakwood Valley Trail. Alternative D provides the most protection for sensitive species and contiguous habitat in the area.

Muir Beach

Alternative D was also chosen as the environmentally preferable alternative. On-leash dog walking would be allowed on the proposed Muir Beach Trail. Alternative D would provide maximum protection for the restored lagoon, shorebirds, steelhead, coho, and the riparian wetlands.

Rodeo Beach / South Rodeo Beach

Alternative D was chosen as the environmentally preferable alternative for Rodeo Beach. Alternative D would allow on-leash dog walking on the beach north of the footbridge and on the footbridge to the beach. Alternative D provides the maximum resource protection and provides resource protection for the beach area closest to Bird Island.

Marin Headlands Trails

Alternative D was chosen as the environmentally preferable alternative for the Marin Headlands Trails. Alternative D would not allow dog walking at the site. Alternative D is the most protective of the resources by maintaining the integrity of the core Marin Headlands habitat.

Fort Baker

Alternative D was chosen as the environmentally preferable alternative. Alternative D would allow on-leash dog walking in the Lodge/Conference Center grounds and the Bay Trail, not including the Battery Yates Loop. Alternative D provides the maximum resource protection for sensitive species and cultural

resources. This alternative is also the most protective of the parade ground and mission blue butterfly habitat at Battery Yates.

Upper and Lower Fort Mason

Alternative B was chosen as the environmentally preferable alternative for Upper Fort Mason. Alternative B includes on-leash dog walking in all areas where dogs are allowed (Great Meadow, Laguna Green, lawns, sidewalks, paved trails, parking lots, and open areas around housing). Alternative B provides the maximum protection of natural and cultural resources at the site.

Crissy Field

Alternative D was chosen as the environmentally preferable alternative for Crissy Field. Alternative D does not allow dogs within the WPA or on the East and Central Beaches. On-leash dog walking would be allowed on the Crissy Field Promenade and within the grassy areas near the old Coast Guard station and a VSCA would be established on the western portion of the airfield. Alternative D provides the most resource protection of the Western Snowy Plover and other shorebirds. It also minimizes the potential for impacts to water quality and wildlife within the tidal marsh.

Fort Point Promenade / Fort Point National Historic Site Trails

Alternative D was chosen as the environmentally preferable alternative for Fort Point. Alternative D would allow for on-leash dog walking on the Battery East Trail. Alternative D would allow dog walking on the least number of trails when compared to the other alternatives presented. Alternative D would protect the natural and cultural resources in the area to the greatest extent.

Baker Beach and Bluffs to Golden Gate Bridge

Alternative D was chosen as the environmentally preferable alternative for Baker Beach. Alternative D would allow on-leash dog walking on the beach south of the north end of the North Parking Lot. On-leash dog walking would also be allowed on the trails leading to the beach south of the north parking lot and on the Presidio Coastal Trail. Dog walking would not be allowed on the northern section of the beach. Alternative D provides the most protection to the shorebirds and other natural and cultural resources at the site.

Fort Miley

Alternative D was chosen as the environmentally preferable alternative. Alternative D would not allow dogs in East or West Fort Miley. Alternative D provides the most protection of the bird habitat and bird watching area. It also provides the most protection for hospital workers/patients, school groups, and visitors. Alternative D provides the maximum protection of the cultural resources in the area.

Lands End

Alternative D was chosen as the environmentally preferable alternative. Alternative D would allow on-leash dog walking on the El Camino del Mar trail and on the Lands End Coastal Trail as far as the connector trail leading to the El Camino del Mar Trail. This alternative would also allow on-leash dogs on the connecting stairs to the Lands End Coastal Trail from the Memorial Parking lot. Since the Lands End Coastal Trail east of the stairway would not allow dogs, alternative D provides the greatest resource protection, including the maximum protection for the coastal scrub communities at the site.

Sutro Heights Park

Alternative D was chosen as the environmentally preferable alternative**.** Alternative D would no longer allow dogs at the site. Alternative D is the most protective of the resources at the site including the formally landscaped sites that are heavily used for weddings and other events.

Ocean Beach

Alternative D was chosen as the environmentally preferable alternative. Alternative D would allow on-leash dog walking on the Ocean Beach Trail along the Great Highway adjacent to the SPPA and on the beach north of Stairwell 21. No dogs would be allowed within the SPPA or on the beach below Sloat Boulevard. Alternative D provides the maximum protection of natural resources including shorebirds and plovers.

Fort Funston

Alternative B was chosen as the environmentally preferable alternative. Alternative B would allow dogs on leash on the beach and on trails not closed to dogs. VSCAs would not be allowed under alternative B. Dog walking on leash throughout the site would protect a restored area at Fort Funston south of the main parking lot and would provide increased opportunities to restore coastal dune and bluff habitat and allow for the reintroduction of San Francisco lessingia. Alternative B would also include a seasonal advisory for visitors and dogs along a strip of beach at the foot of the northernmost bluffs when the bank swallows are nesting. This alternative provides the most protection of the cultural and natural resources in the area including Battery Davis, bank swallow habitat, shorebirds, and the restored areas.

Mori Point

Alternative D was chosen as the environmentally preferable alternative. Alternative D would not allow dog walking at the site; therefore the alternative would provide the most protection of sensitive habitat for California red-legged frogs and San Francisco garter snakes.

Milagra Ridge

Alternative D was chosen as the environmentally preferable alternative. Alternative D would not allow dog walking at Milagra Ridge. Alternative D provides the maximum protection for sensitive habitat, California red-legged frogs, San Francisco garter snake, and mission blue butterfly. It would also best protect the restored habitat and wildlife such as coyote, which are susceptible to disturbance from dogs.

Sweeney Ridge / Cattle Hill

Alternative D was chosen as the environmentally preferable alternative. Alternative D would not allow dog walking at Sweeney Ridge or Cattle Hill. Alternative D would provide maximum protection to the rare, relatively undisturbed, contiguous wildlife habitat and eliminates disturbance to wildlife and vegetation. This alternative also protects habitat of special-status species and habitat restoration areas.

Rancho Corral de Tierra

Alternative D was chosen as the environmentally preferable alternative. Alternative D would limit on-leash dog walking to the two existing San Mateo County trails in the Montara area of the site: Old San Pedro Mountain Road and Farallon Cutoff. Alternative D would provide the greatest protection for resources and to the contiguous habitat, while still allowing some dog walking access.

NATIONAL PARK SERVICE PREFERRED ALTERNATIVE (F)

Preferred Alternative in the Draft Plan/EIS

A preferred alternative was selected for each of the 22 sites identified in this final plan/EIS.

A preferred alternative was selected for each of the sites identified in the plan/EIS. Due to the high number of sites and alternatives, a modified choosing by advantages process was used for choosing the preferred alternative for each site in the draft plan/EIS. The choosing by advantages workshop took place May 26–27, 2010. A similar process was used for selecting the preferred alternative at Rancho Corral de Tierra. These workshops determined the preferred alternative that was presented in the plan/EIS (alternative F). For each site, team members from GGNRA selected the alternative that best met the objectives of the plan (defined in chapter 1). Six main objectives were used to identify the preferred alternative. Each objective included more than one subtopic for the resource. Not all of the subtopics for each objective were compatible, requiring team members to assess competing needs. After evaluating each alternative against each objective, a preferred alternative was selected that best met the objectives for the dog management plan. In addition, a preferred alternative was selected for the handling of permits at GGNRA. To ensure consistency of the permitting process within the park, it would be applied to applicable park sites for alternatives that would include permits. Alternative C was selected as the preferred alternative for permits. This alternative states that all dog walkers, including commercial dog walkers, are allowed up to three dogs per person. Commercial dog walkers and private individuals with more than three dogs can obtain a dog walking permit; however the limit is six dogs. In a VSCA, permit holders may have up to six off-leash dogs subject to compliance with all off-leash requirements and conditions. Permits would restrict use by time and area. Permits would only be issued for: Alta Trail, Rodeo Beach, Fort Baker, Upper Fort Mason, Crissy Field, Baker Beach, and Fort Funston. This alternative provides a variety of park sites for visitors with more than three dogs to experience GGNRA.

Modification of the Preferred Alternative in the Draft Plan/SEIS Based on Public Comment

The draft plan/EIS, which contained a range of alternatives, including a preferred alternative for each of the original 22 park sites addressed by the plan, was made available to the public for review from January 14, 2011 through May 30, 2011. In total, 4,713 correspondences were received and reviewed. Due to the high number of correspondence received and the substance of many of those correspondences, a workshop with the GGNRA interdisciplinary team and senior NPS staff from outside the park took place from September 13, 2011, through September 16, 2011, to discuss possible changes to the preferred alternatives as suggested by the public. Additional meetings and conference calls were held to evaluate new studies and data and determine how this might change impacts analysis and alternatives. Two of the goals of GGNRA dog management planning were to allow dog walking while providing a variety of visitor uses and experiences, and reducing visitor conflicts at GGNRA park sites. GGNRA received multiple public comments requesting that the park sites allow a variety of visitor experiences, including opportunities for dog walking both on and off leash, and also numerous complaints about both on-leash and off-leash dog walking. While GGNRA does not seek to ban dog walking, designation of uses as appropriate for different park sites to allow use by a variety of user groups in such a way as to ensure visitor health, safety, and enjoyment is a primary NPS management responsibility, and well within NPS agency discretion. The NPS Organic Act directs the Secretary of the Interior to conserve the natural elements of the parks for the future, provide for the enjoyment of the parks, and manage the parks “in light of the high public value and integrity of management of the parks” (54 USC 100101). GGNRA’s enabling legislation is similar, and not only incorporates the NPS Organic Act by reference, but also states that the Secretary of the Interior “shall utilize the resources in a manner which will provide for recreation

and educational opportunities consistent with sound principles of land use planning and management. In carrying out the provisions of this subchapter, the Secretary shall preserve the recreation area, as far as possible, in its natural setting, and protect it from development and uses which would destroy the scenic beauty and natural character of the area" (16 USC, Section 460bb). Based on the discussion at the September 2011 workshop, the preferred alternative was modified for publication in the September 2013 draft plan/SEIS. Suggestions made by the public were taken into consideration. The preferred alternatives for some sites were changed to incorporate the public's comments and ideas that met the plan objectives. Some suggestions such as creating VSCAs on trails, and completely enclosing VSCAs with fences or barriers that would contain off-leash dogs were determined to not be feasible or to not meet plan objectives, and were dismissed from further analysis. Explanations for the dismissal of these suggestion are explained in more detail in the section titled "Alternative Elements Eliminated from Further Consideration" above.

Modification of the Preferred Alternative in the Proposed Rule Based on Public Comment on the Draft Plan/SEIS

The draft plan/SEIS was available for public review and comment from September 6, 2013, to February 18, 2014. The NPS received 6,716 pieces of correspondence, which were reviewed and analyzed. A workshop with the GGNRA interdisciplinary team and senior NPS staff from outside the park took place April 3 and 4, 2014, to discuss possible changes to the preferred alternatives as suggested by the public. Additional meetings and conference calls were held to evaluate new studies and data and to determine how this might change impacts analysis and alternatives.

The proposed rule, published in the Federal Register on February 24, 2016, was based on the preferred alternative (alternative F), as described in the draft plan/SEIS with some changes. In general, the principal changes related to conditions for walking four to six dogs under an NPS permit, the adjustment of two VSCAs (Crissy Airfield and upper Fort Funston), the addition of four new trail segments for on-leash dog walking (Rancho Corral de Tierra) and the elimination of one (Fort Baker clarifying definitions, and additional considerations for the monitoring-based management program. These specific changes were incorporated into the proposed rule.

Modification of the Preferred Alternative in the Final Plan/EIS Based on Public Comment on the Proposed Rule

The proposed rule was available for public review and comment for 90 days (February 24, 2016 to May 25, 2016), and during that time, the NPS received more than 4,100 pieces of correspondence. Each comment was read and analyzed. The GGNRA interdisciplinary team met for a roundtable meeting July 20–22, 2016, to discuss the substance of the public comments and to determine what changes to the proposed rule were necessary. Based on the outcome of this meeting, several changes were made to the proposed rule to create the preferred alternative (alternative F) for this final plan/EIS. Modifications to the proposed rule include the following: extension of on-leash dog walking on Kaashi Way from Muir Beach Trail to Pacific Way at Muir Beach; extension of on-leash dog walking along the Black Point Battery trail at Fort Mason; removal of on-leash dog walking on the western section of the airfield at Crissy Field with a larger central off-leash area designated; a realignment and shift of on-leash dog walking to the northern portion of Baker beach; the extension of on-leash dog walking on Mori Headlands Trail at Mori Point; the extension of the Milagra Ridge road to the summit for on-leash dog walking; and the identification of 3 acres at Flat Top in Rancho for off-leash dog walking in that previously-disturbed bowl.

The following discussion identifies the final preferred alternative for each site and the rationale to support the decision. The preferred alternative provides for on-leash and off-leash dog walking opportunities within the 22 sites in a manner that is consistent with NPS legal mandates to conserve park resources and

values and provide for recreational and educational opportunities, is consistent with sound principles of land use planning and management, and preserves the park's natural setting and protects it from uses that could destroy its scenic beauty and natural character. Limitations and restrictions on dog walking in these locations are designed to avoid or minimize adverse impacts on park resources, promote health and safety, reduce conflicts between diverse user groups, and address management responsibilities.

Promulgation and Implementation of the Final Rule

Implementation of the Plan and Rule

Following the publication of this final plan/EIS, the NPS will issue a record of decision identifying the action selected for implementation. The record of decision will be issued at least 30 days after publication of the final plan/EIS to account for the 30-day waiting period mandated by the NEPA regulations. The 30-day waiting period begins when the U.S. Environmental Protection Agency publishes a notice of the filing of the final plan/EIS in the Federal Register.

After the record of decision is issued, the final rule for the plan will be published in the Federal Register and maps illustrating the boundaries of areas open and closed to dogs will be available on the GGNRA website and at park visitor centers. The rule will contain the regulations that will govern dog walking in the areas covered by the plan. The rule will indicate the date on which it will become effective. The NPS has committed to undertaking a robust outreach and education effort related to the implementation of the plan and rule.

The NPS is aware that some of the areas designated for dog walking need to have new signage and that particular VSCAs may also require physical infrastructure improvements prior to supporting the change in uses there. In areas where permanent physical infrastructure is needed, such as Fort Mason VSCA, the NPS will notify the public by posting a list of such areas on the park's website. The NPS will seek ways to engage the public in the design and development of those more permanent physical site improvements, especially for VSCAs. Prior to implementing permanent physical site improvements, temporary demarcations of VSCAs or restricted areas may be established to assist in visual identification of the newly redefined dog walking areas or closed areas. These temporary boundary delineations may take one of many forms, including signage, fencing, or cones. In the first phase of rule implementation following publication of the final rule, the NPS will primarily focus on public outreach and education and the installation of signage and any other temporary demarcations where required.

Dog walkers are reminded that before the new rule goes into effect, existing NPS regulations not superseded by the 1979 Pet Policy remain in place, such as those that prohibit dogs from harming or chasing wildlife. It also requires that dog excrement be disposed of properly and that aggressive dogs are prohibited on parklands. Once the rule is in effect for a particular area, dog walkers will be expected to consult the final rule in the Federal Register and the illustrative maps on the park's website and plan their dog walking activities accordingly. Additionally, where rule implementation is temporarily suspended in areas requiring temporary or more permanent improvements to clearly demarcate dog walking areas, as described below, the general requirements for dog walking in the final rule will continue to apply.

Special Notice Regarding Implementation of Fort Mason, Crissy Field, and Ocean Beach Voice and Sight Control Areas

The following information relates specifically to implementation of the plan and rule in the Fort Mason, Crissy Field, and Ocean Beach VSCAs. Because of the proximity of the Fort Mason VSCA to traffic, safety barriers, such as fencing, are required in this area before it can be used safely for off-leash dog

walking. This area will be unavailable for off-leash dog walking until such safety barriers are installed. The NPS will notify the public when the barriers for the Fort Mason VSCA are installed.

The preferred alternative also identifies the need for physical infrastructure, such as paths, to delineate the boundaries of the Crissy Field VSCA. Until this infrastructure is installed, temporary demarcations of the Crissy Airfield VSCA will be provided to delineate that area and make it available for voice and sight control dog walking. The NPS will notify the public when the long-term infrastructure improvements at Crissy Field are completed. In the meantime, dog walkers will be able to use the central airfield VSCA as demarcated by temporary boundary features.

The preferred alternative for Ocean Beach identifies the beach between Stairwells 1 and 21 as a VSCA and that some form of boundary marker will be identified at Stairwell 21 on the beach to demarcate it from beach areas south of that. Currently, a snowy plover sign that demarcates that boundary; this sign will continue to be used to delineate the VSCA unless and until a more permanent physical boundary feature can be established.

In other areas, signage and/or fencing may delineate the boundaries unless and until other physical improvements can be instituted if required.

PREFERRED ALTERNATIVE

Marin County Sites (Alternative F)

Stinson Beach

Alternative C was originally chosen as the preferred alternative for Stinson Beach; however, after reviewing public comments on the draft plan/EIS, the preferred alternative was slightly modified to establish an on-leash path or corridor on the north end of Stinson Beach to provide legal access to Upton Beach, which is the Marin County-managed section of Stinson Beach where dog walking is allowed. This access trail would include fencing, a barrier, or clear demarcation to separate this trail from the GGNRA beach where dogs are prohibited. On-leash dog walking for up to three dogs would be allowed within the GGNRA parking lots and associated picnic areas. After reviewing public comments on the draft plan/SEIS, the preferred alternative was modified to make the South Picnic Area between the south and central parking lots dog-free with an on-leash road shoulder on the eastern edge of roadway connecting the two parking lots. Commenters on the proposed rule expressed a preference for dog-free picnic areas, this change to the preferred alternative provides opportunity for a picnic area with dogs on-leash and also without dogs. The preferred alternative would stay consistent with 36 CFR 2.15, which states that dog walking is prohibited on a designated NPS swimming beach. Designated swimming beaches are those that the park has identified (using signs, brochures etc.) as available to the public for contact recreational water activities. Therefore, on-leash or off-leash dog walking would not be allowed on the GGNRA portion of beach, but would remain available on the county section of Stinson beach immediately adjacent to the GGNRA portion. Should the South Parking Lot flood with access to the South Picnic Area impeded, then the Central Picnic Area would become the dog-free picnic area and be signed as such temporarily until access and use of the South Picnic Area could be restored.

Overall, the preferred alternative would provide a variety of visitor experiences, including on-leash dog walking, protect park resources, and would be easily explainable and enforceable by park law enforcement staff.

Homestead Valley

Alternative C was originally chosen as the preferred alternative for Homestead Valley, as it would allow dog walking that is clearly defined, easily understood by visitors, and enforceable by park law enforcement staff. On-leash dog walking would be allowed on Homestead Fire Road from Lattie Lane to Panoramic Highway, on Homestead Summit Trail from Homestead Fire Road to the junction with Homestead Trail at Four Corners, and on the Homestead Trail from Four Corners to the GGNRA boundary. Based on comments on the draft plan/SEIS the preferred alternative was altered slightly to allow on-leash dog walking on the Eagle Trail. This would allow a loop trail using Eagle Trail and Homestead Trail inside the park and adjacent community trails outside the park, especially for frequent users of that area from the neighborhood. All on-leash dog walking at Homestead Valley would be limited to three dogs per dog walker. Natural resources within the Homestead Valley site include coyotes, spotted owls, rare native grassland, and coastal scrub. Requiring leashes would prevent dogs from entering habitats along the trail corridors. VSCAs would not be allowed due to the presence of wildlife and wildlife habitat; it would be difficult to prevent dogs from entering wildlife habitat. Homestead Valley, although accessible off a major local highway, does not have sufficient parking areas to support visitation to a formalized VSCA. In addition, as discussed above, VSCAs on trails and fire roads create safety concerns. Local visitors within walking distance looking for an off-leash dog walking opportunity could use the adjacent network of trails managed by the Homestead Valley Trust on the eastern boundary of the site where off-leash dog walking may be allowed.

Overall, the preferred alternative would provide a variety of visitor experiences, including on-leash dog walking, would protect park resources, and would be easily explainable and enforceable by park law enforcement staff.

Alta Trail / Orchard Fire Road / Pacheco Fire Road

Alternative C was originally chosen as the preferred alternative for Alta Trail/Orchard Fire Road/Pacheco Fire Road; however, after reviewing public comments on the draft plan/EIS, the preferred alternative was modified to extend on-leash dog walking on the Alta Trail south to the junction with the Morning Sun Trail. On-leash dog walking for up to three dogs would be allowed on Orchard and Pacheco Fire Roads from the Alta Trail to the park boundary and on Alta Trail from the entrance at Donahue Street to the Morning Sun Trail junction. A survey of a portion of Alta Trail at the Donahue Street entrance would be required before this section of the trail could be officially designated as an on-leash dog walking area. Dog walking requiring a permit (for bringing four to six dogs into the park) would be allowed on-leash on the Alta Trail, but permit holders would only be allowed from the Donahue Street entrance to the junction with the Orchard Fire Road. The preferred alternative for the Alta Trail site provides dog walking opportunities to visitors while being protective of mission blue butterfly habitat because the leash requirement would prohibit dogs from entering mission blue butterfly habitat. Additional fencing to protect the mission blue butterfly habitat would be added as needed, particularly along the section of Alta Trail between the junction with Pacheco Fire Road and the junction with the Oakwood Valley Trail. The preferred alternative also provides protection for contiguous habitat with little fragmentation where dogs can impact top predators such as coyotes. A full loop trail within the site, beginning and ending at the top of Donahue Street is not feasible since it would require GGNRA to create a new trail to create such a loop in the northern portion of the site, which contains mission blue butterfly habitat. Currently a social trail makes that connection but because it goes through mission blue butterfly habitat, it will not be formalized. The park would monitor the area to ensure that park users do not use the social trails off Alta Trail so that the mission blue butterfly habitat is protected.

VSCAs would not be established on the Alta Trail or on Pacheco or Orchard Fire Road. Alta Trail is regularly used by commercial dog walkers. Allowing off-leash dog walking, particularly at a site used

often by commercial dog walkers, could inhibit use of the site by other visitors as they would have to travel through a VSCA in order to use the trail or access the interior sections of the Marin Headlands. In addition, allowing off-leash dog walking would impact the mission blue butterfly and its habitat. NPS *Management Policies 2006* require that NPS "ensure that conservation will be predominant when there is a conflict between the protection of resources and their use" (NPS 2006a). A VSCA is inappropriate in areas where there is core habitat, including habitat for listed species, which can be harmed by off-leash dogs.

Overall, the preferred alternative would provide a variety of visitor experiences, including on-leash dog walking, would protect park resources, and would be easily explainable and enforceable by park law enforcement staff.

Oakwood Valley

Alternative C was originally chosen as the preferred alternative for Oakwood Valley; however, after reviewing public comment on the draft plan/EIS, the preferred alternative was modified to allow only on-leash dog walking in Oakwood Valley. On-leash dog walking for up to three dogs would be allowed on the Oakwood Valley Fire Road. On-leash dog walking would also be allowed on the Oakwood Valley Trail from its junction with the Oakwood Valley Fire Road to the junction with the Alta Trail. Based on comments on the proposed rule, an additional segment of trail was opened to on-leash dog walking. Dog walkers with up to three dogs would also be allowed on the Rhubarb Trail from the access path from Tamalpais Community Service District's property at the park boundary east to Tennessee Valley Road. This addition would allow visitors to access the Oakwood having to drive there. Permitted dog walking allowing more than three dogs per walker would not be allowed at this site. On-leash dog walking would provide protection to the sensitive species and habitat located along the trails. A no dog walking experience would be allowed on the Oakwood Meadow Trail from the trailhead at Tennessee Valley Road to the junction with the Oakwood Valley Fire Road.

VSCAs would not be established at Oakwood Valley because VSCAs would allow dogs to enter sensitive habitat. Protective fencing along trails, and double gates at either end of the VSCAs to contain off-leash dogs would not be installed to allow a VSCA because it would also impede the movement of wildlife and interfere with the use of the trail by other users, such as equestrians and bicyclists. The park also finds that VSCAs on trails and fire roads would inhibit some park users and create safety hazards as discussed previously. In addition, sufficient parking is not available to support a formalized VSCA as visitation could increase once the new dog walking regulation for GGNRA is finalized and the GGNRA VSCAs become more widely known.

Overall, the preferred alternative would provide a variety of visitor experiences, including on-leash dog walking, protect park resources, and would be more easily explainable and enforceable by park law enforcement staff.

Muir Beach

Alternative D was originally chosen as the preferred alternative for Muir Beach where on-leash dog walking would be allowed in the parking lot and the Pacific Way Trail. However, after considering public comments on the draft plan/EIS, the preferred alternative was modified to also allow on-leash dog walking along the connecting bridge and new Muir Beach trail and on the beach (including the adjacent waters immediately offshore). Since the draft plan/SEIS was published, NPS clarified that their easements with Green Gulch give NPS the authority to designate dog-walking access on Kaashi Way. When the park considered this in conjunction with comments on the draft plan/SEIS and the proposed rule, the preferred alternative was further modified to allow on-leash dog walking on Kaashi Way. On-leash dog walking

would be allowed from the junction with the Muir Beach Trail to the junction with Pacific Way and on the trail parallel to the access road from Pacific Way through the Muir Beach parking lot to create a loop trail with Muir Beach Trail. Therefore, the extent of the map for the preferred alternative was expanded to include Kaashi Way. Although on-leash dog walking would be allowed on Muir Beach, when there is a connection of the surface water between the lagoon and the ocean, dogs would not be allowed into the surface waters connecting the two water bodies. All dog walking at Muir Beach would be limited to three dogs per dog walker. Fencing would be installed along the dunes and the lagoon to protect the natural resources in these areas. The fencing would act as a visible barrier, but would not completely exclude dogs from the area, as this type of fencing would be inappropriate at Muir Beach and not sustainable due to tidal action. Allowing on-leash dog walking on the beach and installing visual barriers would enable the park to manage the area in order to restore, protect, and sustain the wetlands, creeks, dunes, and lagoon. The preferred alternative would also provide protection for the shorebirds, California red-legged frog, steelhead trout, coho salmon, and other wildlife in the area. Allowing on-leash dog walking on the beach would protect the visitor experience and enhance visitor safety, as dogs are under control on a 6-foot leash. It should be noted that construction of the parking lot and Muir Beach Trail (boardwalk and pedestrian bridge) have been completed since the draft plan/SEIS was issued; therefore, there are differences between the original maps for alternatives A–E and the preferred alternative.

A VSCA would not be established at Muir Beach. Muir Beach is a small site and there is not sufficient space to allow a variety of visitor experiences on the beach (i.e., a VSCA and no-dog area). In addition, the fencing installed along the dunes and lagoon would only act as a visible barrier and would not protect resources as off-leash dogs would still be able to access these sensitive habitats. NPS *Management Policies 2006* require that NPS "ensure that conservation will be predominant when there is a conflict between the protection of resources and their use" (NPS 2006a). A VSCA is inappropriate in areas where there is habitat for listed species, which can be harmed by off-leash dogs. However, Rodeo Beach, in southern Marin, much, larger than Muir Beach, is available for off-leash dog walking in Marin County.

Overall, the preferred alternative would provide for a variety of visitor experiences, including on-leash dog walking, protect park resources, and would be easily explainable and enforceable by park law enforcement staff.

Rodeo Beach / South Rodeo Beach

Alternative C was originally chosen as the preferred alternative for Rodeo Beach, which created a VSCA from the northern terminus of Rodeo Beach to South Lagoon Loop Trail and allowed on-leash dog walking on the bridge connecting the beach to North Lagoon Loop Trail. After reviewing public comments on the draft plan/EIS, the preferred alternative was modified to extend the VSCA the entire length of the main beach (including the adjacent waters immediately offshore), from the northern boundary of the beach south to just beyond the sea stacks, which would create more area for off-leash dogs and divide the main beach from South Rodeo Beach. On-leash dog walking on the steps was also added, providing another connection between the beach and North Lagoon Loop Trail. Allowing a VSCA at Rodeo Beach would provide a large, wide beach area for an extensive off-leash dog experience in Marin County; the VSCA also includes the adjacent waters immediately off-shore. After the draft plan/SEIS, the preferred alternative was modified slightly. When surface waters connect the lagoon and ocean, dogs would be prohibited from entering those connecting surface waters in the northwest portion of the VSCA, as well as from using the Rodeo Beach access steps during those seasonal periods. It also includes allowing off-leash use along the beach to the "sea stacks" in the southern portion of the main beach. Compared to other beaches within Marin County, shorebird counts along the beach are considered low, which allows a VSCA with minimal disturbance to shorebirds. Fencing or other demarcations would be installed when funding becomes available through another park project from the footbridge across the western edge of Rodeo Lagoon, providing protection for that sensitive habitat; the fencing was approved

as part of the Marin Headlands transportation plan. During marine mammal strandings and releases, the beach area would be closed off to the public. The VSCA at Rodeo Beach and the associated, on-leash access areas (i.e., steps and bridge) would allow up to three dogs without a permit and four to six dogs with an approved permit issued by the NPS.

Rodeo Beach is considered a low conflict area, and due to the large size of the beach, other users such as school groups would continue to safely use the area without conflicts. Further, on-leash dog walking on the footbridge to the beach would provide safe access for visitors with and without dogs to the beach area. The preferred alternative would also provide a separate beach area, South Rodeo Beach, for a no-dog experience. This beach is accessed through a separate, dog-free trail (South Rodeo Beach Trail) off the parking area near the Batteries Loop Trail. This latter trail does allow on-leash dog walking (see Marin Headlands Trails for full description). Allowing a no-dog beach experience would benefit children's groups such as those from the Point Bonita Young Men's Christian Association that frequently use this area. Eliminating dog walking from South Rodeo Beach also provides resource protection on the section of beach closest to Bird Island.

Overall, the revised preferred alternative would provide for a variety of visitor experiences, including on-leash and voice- and sight-control dog walking, would protect park resources, and be easily explainable and enforceable by park law enforcement staff.

Marin Headlands Trails

Alternative C was originally chosen as the preferred alternative for Marin Headlands Trails, allowing on-leash dog walking in the Lower Rodeo Valley Trail Corridor from the Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via the North Lagoon Loop Trail, and sections of the Miwok Trail, and Rodeo Valley Trail; Old Bunker Fire Road, and the Batteries Loop Trail. After reviewing public comments on the draft plan/EIS, the preferred alternative was modified to add on-leash dog walking on the Rodeo Avenue and Morning Sun Trails, which both connect with the Alta Trail, allowing on-leash dog walking from the Morning Sun Trail or Rodeo Avenue trailheads to the end of Alta Trail at Donahue Street, above Marin City. This would provide additional on-leash dog walking mileage and increased access for nearby neighborhoods. Based on public comment on the draft plan/SEIS, the preferred alternative was modified to add on-leash dog walking on the Smith Trail from the parking lot to Rodeo Valley Trail. For the preferred alternative, the maps for Rodeo Beach/South Rodeo Beach and Marin Headlands Trails differ from the maps for alternatives A–E. The extents of the maps were changed for ease of use; therefore, some trails that are considered part of Marin Headlands are included on the Rodeo Beach/South Rodeo Beach map. For consistency, the discussions of the areas where dog walking would be allowed is consistent across alternatives, but the reader will have to refer to maps 6F-1, 6F-2, and 7F for a visual representation of the preferred alternative for Marin Headlands.

On-leash dog walking at Marin Headlands would be generally restricted to the perimeter of the Marin Headlands in order to protect the large area of relatively undisturbed habitat in the Marin Headlands interior. All areas would be limited to one to three dogs, except that portion of the North Lagoon Loop Trail from the Rodeo Beach parking lot along Mitchell Road to the pedestrian access bridge to Rodeo Beach. Only that portion of the North Lagoon Loop Trail would be open to dog walkers with four to six dogs on-leash with an NPS-issued permit. A no-dog experience would be available on the interior trails in this area. The central or core area of the Marin Headlands, including Tennessee Valley, is being managed to protect a large area of relatively undisturbed, contiguous habitat that contains wildlife that could be disturbed by the presence of dogs. Dog walking, whether on leash or under voice and sight control, is not protective of this core habitat and is therefore not permitted in the central portion of the site.

VSCAs would not be established within the Marin Headlands. NPS *Management Policies 2006* require that NPS "ensure that conservation will be predominant when there is a conflict between the protection of resources and their use" (NPS 2006a). A VSCA is inappropriate in areas where there is core habitat, including habitat for listed species and habitat which can be harmed by off-leash dogs. The park also finds that VSCAs on trails and fire roads would create safety hazards as discussed previously, and could inhibit use of trails by visitors who prefer to experience the park without dogs. Visitors wanting to walk dogs off leash would be able to use the large VSCA on Rodeo Beach nearby.

Overall, the preferred alternative would provide for a variety of visitor experiences, including on-leash dog walking, protect park resources, and would be easily explainable and enforceable by park law enforcement staff.

Fort Baker

Alternative C was originally chosen as the preferred alternative for Fort Baker. After reviewing comments on the draft plan/EIS, the preferred alternative was altered slightly to include on-leash dog walking on the Vista Point Trail (a planned trail to be built). Based on public comment on the draft plan/SEIS and further analysis, the preferred alternative was modified to eliminate two on-leash areas: Drown Fire Road to protect mission blue butterfly habitat and Vista Point Trail, which is still under construction and likely to be heavily used by several thousand rental bicyclists per day on weekends once constructed. On-leash dog walking would be allowed on the parade ground; on the length of the Bay Trail from the northern parking lot off Conzelman Road to the park boundary in the north along East Road; on the Fort Baker Trail between the southern intersection with the Bay Trail at Sommerville Road to the northern intersection with the Bay Trail at East Road; and from the main parking lot at the Bay Area Discovery Museum on its connecting trails to both the Bay and Fort Baker trails. At Fort Baker, dog walkers could walk up to three dogs without a permit in the areas described; walking four to six dogs with an NPS-issued permit would also be allowed on all on-leash areas at Fort Baker except around any portion of the Cavallo Point Lodge buildings outside the main parade ground. The preferred alternative provides protection for the mission blue butterfly habitat including the unfenced habitat near Battery Yates and the fenced habitat adjacent to the Chapel Trail. The preferred alternative provides some areas with a no-dog experience such as the waterfront, which is currently popular for visitors and is anticipated to have an increase in visitation in the future when that section of Fort Baker is improved.

VSCAs would not be established at Fort Baker. Creating a VSCA on the parade ground would be incompatible with the historic district and could impact the visitor experience in the historic area. VSCAs on trails and fire roads would create safety hazards and could inhibit other user groups as discussed previously. VSCAs would also create impacts to mission blue butterfly habitat located along the Drown Fire Road and at Battery Yates.

Overall, the preferred alternative would provide for a variety of visitor experiences, including on-leash dog walking in a variety of areas that could be clearly described and enforced by park law enforcement staff.

San Francisco County Sites (Alternative F)

Upper and Lower Fort Mason

Alternative B was originally chosen as the preferred alternative for Upper Fort Mason with on-leash dog walking in the following areas: Great Meadow, Laguna Green, lawns, sidewalks, paved trails, parking lots, and housing areas. After reviewing public comments on the draft plan/EIS, the preferred alternative was modified to reduce the on-leash dog walking areas in the eastern portion of the site and to establish a

VSCA on Laguna Green, a grassy area on the southwest portion of Fort Mason with no sensitive habitat. In this VSCA, dog walkers could have up to three dogs without a permit, or four to six dogs with an NPS-issued permit. This VSCA is largely separated from the main Fort Mason area by a barrier, so that the use is not likely to impact other user groups. Fencing and/or other landforms, including a vegetative barrier, would be installed to further separate the VSCA from the remaining on-leash dog walking areas and to prevent dogs from entering the road. Further evaluation of the site is needed to determine the design of a safe boundary for the southwestern border of the designated VSCA.

Based on comments on the draft plan/SEIS and proposed rule, several changes were made to the on-leash dog walking areas allowed by the preferred alternative. All dog walking was eliminated from the piers at Lower Fort Mason and the General's Residence area. Areas in Fort Mason open to on-leash dog walking of up to three dogs include the following: the multi-use Fort Mason Bay Trail; the Black Point Battery Trail; the Great Meadow paths and grass areas; several grass areas between Van Ness Avenues south of Building 9 and Franklin Street, all sidewalks; the grass areas east of Building 101; and the triangulated grass area within Shafter court. All of the dog walking areas in Fort Mason are open to dog walkers with up to three dogs without a permit, or four to six dogs with an NPS-issued permit, except the grass areas designated as the Great Meadow Picnic Area between the Great Meadow paths, where the limit is three dogs. A no-dog experience would be available, within the Community Gardens, the parade grounds and surrounding areas across from the Youth Hostel, the top of Black Point Battery and on the lawn areas around the General's Residence, the NPS Headquarters, the gardens north of the General's Residence and associated housing areas as well as the vendor staging area.

Although the 1979 Pet Policy required on-leash dog walking at Fort Mason, the dog management plan re-evaluates dog walking in consideration of numerous factors (see chapter 1). One management objective of the plan is to allow a mix of visitor uses and experiences where appropriate. While Fort Mason is not an environmentally sensitive area relative to other sites, the site is heavily used. It contains park headquarters, an international hostel, the Community Garden, and areas used for social and special events, and is heavily used for local and tourist pedestrian and bicycle transit. Allowing off-leash dog walking throughout Fort Mason is neither practical nor appropriate given the many other uses at the site and the potential for impacts to cultural resources.

The Great Meadow and adjacent path receives high use by bicyclists, picnickers, and casual recreators. Establishing a VSCA within this area would create safety hazards for a variety of visitor experiences. Creating a VSCA within the parade ground would also be inappropriate. It is likely that cultural artifacts exist within the parade ground since the area was the central portion of the early fort. Recently, human remains were uncovered during restoration of the former post hospital, directly adjacent to the parade ground. Creating a VSCA would create a risk of dogs digging within the area and disturbing or damaging unknown cultural resources.

Crissy Field

Alternative C was originally chosen as the preferred alternative for Crissy Field. After reviewing public comments on the draft plan/EIS, draft plan/SEIS, and the proposed rule, the preferred alternative was modified for several reasons, including compliance with FRA accessibility regulations and reducing interference with multi-use pathways. The changes in the preferred alternative include the placement of the VSCA and on-leash areas on the Crissy airfield, creating a dog-free picnic area in the West bluff, and eliminating larger groups (four to six) of dogs on the heavily-used Crissy Promenade (except for crossing over to or accessing Central beach) and in picnic areas.

The preferred alternative would not allow dogs within the WPA to provide maximum protection for the western snowy plover and other shorebirds and listed species. No dogs would be allowed on East Beach,

which is nearest to the parking facilities and frequently used by families with small children and other user groups including windsurfers, kiteboarders, sunbathers, and picnickers. Allowing dog walking within this area could impact the visitor experience of the many varied groups that use this section of Crissy Field. In addition, East Beach is very crowded on weekends and good weather days, which could cause health and safety concerns, especially for children. The no-dog area on East Beach would include the adjacent mouth of the Crissy Lagoon, which would keep dogs from accessing the lagoon via the outlet. Additionally, no dogs would be allowed on the western portion of the Crissy airfield. This area is often used for family or group picnics and events, and prohibiting dogs would allow for an additional no-dog area for families on the airfield while still providing dog walking access to the majority of the airfield. Dogs would continue to be prohibited within public buildings, including the restrooms and the adjacent shower; however, they would be allowed to use the newly installed dog rinse station.

Although portions of Crissy Field contain coastal native dune communities that provide an important and unique habitat, VSCAs would be established under the preferred alternative in the central portion of the airfield and Central Beach where natural resources are limited or protected by barriers. On the airfield, a VSCA would be established in the central section, which is a shift from its previous location in the eastern part of the airfield (in the draft plan/SEIS). This VSCA would be bounded by paths on the eastern and western edges and by on-leash buffers along its northern and southern boundaries with landscape design demarcations. This design would create buffers between the off-leash dog area and the multi-use pathways at the Promenade and Mason Street. Additionally, the western path would separate dogs from the no-dog area in the western portion of the airfield. Limiting the VSCA to the central portion of the airfield allows an on-leash experience on the airfield for visitors who would rather walk their dogs on leash and for visitors who do not wish to be around off-leash dogs. It would also provide space in the western sector for those seeking a dog-free experience. The VSCA on the airfield could be closed during large special events in order to allow multiple visitor uses at the site; however, special events most often take place on either the eastern or western sectors of the airfield. In addition, the VSCA could be adjusted by approximately one acre to allow for future potential design updates and safety improvements, as proposed in future planning projects.

A second VSCA would be established on Central Beach (including the adjacent waters immediately offshore), as this portion of the beach does not provide as suitable a habitat for shorebirds as does the beach in the WPA. Central Beach also receives less use by visitor groups other than dog walkers and it offers a sizeable stretch of beach for dogs to exercise. Fencing would be maintained around the dunes bordering Central Beach and added at the eastern boundary of the Central Beach VSCA. The western fencing has been moved a couple of hundred feet east to provide a buffer for the WPA. The eastern fencing would be in place to separate the dogs from the tidal marsh outlet; therefore, excluding dogs from the dunes and the sand spit and waters north of the tidal marsh outlet, one of the most sensitive areas of Crissy Field for shorebirds. Fencing would also protect vegetation, wildlife, and wildlife habitat. This VSCA has been modified from previous versions to address FRA accessibility.

The VSCAs established at this site would allow dog walkers two separate environments for off-leash dog walking, a central portion of the grassy area of the airfield and the entire central portion of the beach. Both VSCAs are open to dog walkers with up to three dogs and for dog walkers with four to six dogs with an NPS-issued permit.

The preferred alternative would allow on-leash dog walking of one to three dogs on the Promenade, which would provide visitor safety and resource protection. On-leash dog walking is necessary for the safety of all visitors and dogs because the Promenade receives high use by many user groups including walkers of all ages, joggers, bicycles, children, and parents with strollers. On-leash dog walking along the Promenade and the access trails to Central Beach would give dog walkers access to the VSCA on Central Beach, as well as direct access between the two VSCAs at Crissy Field. The eastern section of the airfield

would also be available for on-leash dog walking, as well as the paths surrounding the Crissy Airfield VSCA. The trails, flat grass, and composite areas near East Beach between the Promenade Cut-off Trail and the park boundary, the East Beach parking lot, the paths and hardened areas around the old Coast Guard station, and the Mason Street Bike Path, and the Crissy Field Warming Hut picnic area. The on-leash regulation in these areas would benefit the safety of both visitors and pets and reduce conflicts in the area. All of these areas would be open to dog walkers with up to three dogs. Dog walkers with four to six on-leash dogs and an NPS-issued permit would only be allowed on those sections of the Crissy Airfield allowing for on or off-leash uses, on-leash across the Crissy Promenade directly from Airfield to aligned paths into the Central Beach VSCA; on-leash on that section of the Crissy Promenade that leads directly from the East Beach parking lot to the eastern-most Central Beach access path; and they would also be allowed on the pedestrian side of the Mason Street Multi-use Path.

Overall, the revised preferred alternative would provide the best option for multiple user groups to experience the site, including on-leash dog walking, dog walking under voice and sight control, and a no-dog experience. It is anticipated that clear geographic boundaries would aid visitor understanding and compliance with the regulations. Since the preferred alternative provides multiple dog walking options, it would be easy for park staff to direct park users to a section of this site that meets their use needs.

The preferred alternative is consistent with the GGNRA GMPA and the Final Recovery Plan for the Western Snowy Plover, and amends the Crissy Field EA. Commenters have noted that the preferred alternative is inconsistent with the Crissy Field EA, which provided up to 70 acres of off-leash use. However, the Crissy Field EA was a broad planning document initiated at the beginning of the Crissy Field redevelopment and restoration project, before clear user patterns and preferences could be known, and before GGNRA began a comprehensive review of dog management for its managed lands. Now that GGNRA has managed the restored Crissy Field for over a decade, visitation patterns, user complaints, natural resources, and enforcement issues have been noted and it is clear that dog walking is a use that must be evaluated with other competing uses within this extremely popular area.

Fort Point Promenade / Fort Point National Historic Site Trails

Alternative B was originally chosen as the preferred alternative and included on-leash dog walking on the Fort Point Promenade, Bay Trail, Andrews Road, Presidio Promenade, and Battery East Trail. Based on public comments on the draft plan/EIS, on-leash dog walking was extended to include the Coastal Trail west of Golden Gate Bridge. This alternative would limit on-leash dog walking to a maximum of three dogs in all areas where dogs are allowed. The on-leash regulation would provide visitor safety in an area of high congestion and multiple uses. It would also provide increased safety to dogs and dog walkers on the Fort Point Promenade due to the close proximity of the roadway and the edge of the seawall. A no-dog experience would continue to be available on the pier and within the fort itself. Fort Point is a relatively small site with few trails and it is a challenge to divide the trails to provide different experiences. Although there are parallel trails at Fort Point that could be managed differently, because the loops intersect one another it would be confusing to the public if some trails were designated as no-dog areas. The nearest no-dog trail to the Fort Point site will be the planned Fort Point Trail from the Fort Point parking lot to the Coastal Trail. The preferred alternative provides a reasonable approach for the multiple user groups at the site and provides clear regulations that would be easily enforceable by park law enforcement staff.

VSCAs would not be established at Fort Point. The park finds that VSCAs on trails and fire roads would create safety hazards and could inhibit other user groups as discussed previously. In addition, there is no beach available for establishment of a VSCA at Fort Point because the shoreline of the Fort Point site is a rock seawall and the small beach located west of the historic fort is not open for public use.

Baker Beach and Bluffs to Golden Gate Bridge

Alternative D was originally chosen as the preferred alternative for Baker Beach, which would allow on-leash dog walking on the beach south of the North Parking Lot and on the trails to the beach south of the north parking lot, and on the multi-use Coastal Trail. However, based on public comments on the draft plan/SEIS and the proposed rule, the preferred alternative was modified.

The preferred alternative would allow on-leash dog walking on the 'North Beach' between the northern terminus of the beach and the Baker Beach Access Trail #2 (including the adjacent waters immediately offshore). Requiring that dogs be on-leash on 'North Beach' would provide an area of protection from disturbance by uncontrolled dogs for wintering shorebirds and rare plants on the hillside while still providing dog walking access at Baker Beach. On-leash dog walking for up to three dogs would also be allowed on the Coastal Trail from the northern boundary of the site to the Baker Beach parking lot, Baker Beach Access Trails #1 and #2 and the North Picnic Area. South of the Baker Beach parking lot, on leash dog walking would be allowed on the trail from the southern parking lot to the intersection with the 25th Avenue path and the access path from the 25th Avenue gate to the beach south of NPS lands. The 'North Beach,' Baker Beach Access Trails #1 and #2, the segment of the Coastal Trail from the northern parking lot to Baker Beach Access Trail #1, and the northern and southern parking lots would be open to dog walkers with four to six on-leash dogs and an NPS-issued permit, including the connector trail along the road shoulder between the parking lots. Dog walking would not be allowed in the South Picnic Area, on the section of beach south of the Baker Beach Access Trail #2 or on trails accessing that section of Baker Beach referred to as 'South Beach, including riparian area around Lobos Creek outlet.' Restricting dogs from these areas would provide a no-dog experience to visitors who prefer not to be within the vicinity of dogs while enjoying their beach experience. The preferred alternative provides areas for different user groups and direct visitor access to the no dog area beach area. The preferred alternative would also provide important protection for shorebirds on the beach.

A VSCA would not be established at Baker Beach. Use of this site by dog walkers is relatively low, compared to other GGNRA beach sites in San Francisco, and some visitors may prefer to walk dogs on leash on a beach designated as "on leash only" rather than within a VSCA. In addition, visitors using guide dogs would be able to experience a beach on the ocean without encountering off-leash dogs, which can negatively impact both the visitor and the guide dog. There are other VSCA options available on nearby San Francisco beaches, both under GGNRA as well as immediately south of Baker Beach for nearby residents. Additionally, this would provide an area of protection from disturbance by uncontrolled dogs for wintering shorebirds and rare plants on the hillside in the north; it would also provide the 'South Beach' area for the majority of users who are without dogs as well as protect shorebirds that congregate at Lobos Creek at the southern end of the NPS beach when the creek is actively flowing. NPS *Management Policies 2006* require that NPS "ensure that conservation will be predominant when there is a conflict between the protection of resources and their use" (NPS 2006a). A VSCA is inappropriate in areas where there is habitat for listed species, which can be harmed by off-leash dogs. Baker Beach is also the only beach in San Francisco that would provide an on-leash dog walking opportunity along the beach; all other beaches are designated as either a VSCA or no dog area. A VSCA on the Coastal Trail would also be inappropriate because the park finds that VSCAs on trails and fire roads would create safety hazards and could inhibit use by other user groups as discussed previously. Overall, the preferred alternative would provide for a variety of visitor experiences, including on-leash dog walking, protect park resources, and would be easily explainable and enforceable by park law enforcement staff.

Fort Miley

Alternative C was chosen as the preferred alternative for Fort Miley because it would best meet the objectives of the plan. The preferred alternative would allow on-leash dog walking for up to three dogs in

the east side trail corridor between Clement Street and the NPS boundary at East Fort Miley. The on-leash requirement in that area would provide safety for visitors and staff given the adjacent park maintenance operations area, in concrete bunkers surrounded by steep embankments. The preferred alternative in East Fort Miley also would provide both a dog and no-dog experience for visitors. No dogs would be allowed in West Fort Miley. This would provide a no-dog experience for special use groups at that site such as school groups, Ropes Course participants, picnickers, and birders. Overall, the preferred alternative would provide additional safety for visitors with dogs, given the site's traffic due to both construction and hospital workers and patients from the adjacent VA hospital. Overall, the preferred alternative would provide for a variety of visitor experiences, including on-leash dog walking, protect park resources, and would be easily explainable and enforceable by park law enforcement staff.

VSCAs would not be established at Fort Miley because the park finds that VSCAs on trails and fire roads would create safety hazards and could inhibit other user groups as discussed previously.

Lands End

Alternative B was originally chosen as the preferred alternative, allowing on-leash dog walking on the El Camino del Mar and Coastal Trails and connecting trails, and the Memorial and Lands End parking lots and connecting stairs. The preferred alternative was modified slightly based on public comments on the draft plan/EIS to include on-leash dog walking on the El Camino del Mar Trail from the park boundary to the Memorial Parking Lot. The preferred alternative would allow on-leash dog walking for up to three dogs on these trails and parking lots in Lands End. This area has been improved, and visitation has increased, due to the new visitor center, accessible trail, and additional parking; therefore, on-leash dog walking is more appropriate than a VSCA. VSCAs would not be established at Lands End, which is consistent with the park not allowing off-leash dog walking on trails as described previously. On-leash dog walking would also increase visitor safety on the heavily used/FRA accessible restored section of the Lands End Coastal Trail.

Overall, the preferred alternative would provide for a variety of visitor experiences, including both on-leash dog walking and no dog areas, protect park resources, and would be easily explainable and enforceable by park law enforcement staff.

Sutro Heights Park

Alternative E was originally chosen as the preferred alternative, which would allow on-leash dog walking on the paths, parapet, and lawns within Sutro Heights Park; however, the preferred alternative was modified due to public comments on the draft plan/SEIS. The preferred alternative would also allow on-leash dog walking on the Parapet, which was a no-dog area previously. All dog walking areas would be open to dog walkers with up to three dogs. This alternative would be easily enforceable since it is clear, straightforward, and easy to understand. Dog walking would not be allowed within the formal, landscaped gardens. Other areas for a no-dog experience would not be available due to the small size of the site. A no-dog experience would be available on the no-dog trails at Lands End, adjacent to Sutro Heights Park.

A VSCA would not be established at Sutro Heights Park. Historically, this site has always been designated as an on-leash area. Allowing off-leash dog walking areas within the formal gardens is not compatible with the desired visitor experience or desired conditions at the site. In addition, the park has received multiple complaints from neighborhoods about off-leash dogs within the formal planted areas. This final plan/EIS would result in the establishment of a large VSCA on the north end of Ocean Beach, a short distance from this site.

Overall, the preferred alternative would provide for a variety of visitor experiences, including on-leash dog walking, protect park resources, and would be easily explainable and enforceable by park law enforcement staff.

Ocean Beach

Alternative C was originally chosen as the preferred alternative; however, based on public comments on the draft plan/SEIS, the preferred alternative has been modified. Conditions at Ocean Beach have changed since the plan/SEIS was published. The portion of Ocean Beach Trail between Lincoln Highway and Sloat Boulevard is being resurveyed in 2017 by the City and County of San Francisco. If it remains in GGNRA lands, it will be designated as an on-leash trail; if not, it is understood that on-leash use may continue on this single-track path, just not under GGNRA jurisdiction. Nonetheless, GGNRA would continue to prohibit dogs west of the Ocean Beach Trail along the eastern section of dunes, and would consider the Ocean Beach Trail as a continued on-leash dog walking option for the public under either agency's jurisdiction.

The preferred alternative would establish a large VSCA for dog walkers with up to three dogs on the beach between Stairwell 21 and the north end of Ocean Beach, which includes the adjacent waters immediately offshore. Stairwells 1 to 21 leading to the VSCA on the beach would require dogs to be on-leash until well onto the beach itself. This northern portion of the beach is appropriate for a VSCA because of the lower density of shorebirds and, in spite of its high use largely due to ease of visitor access from less crowded parking lots, the beach is wide enough to accommodate a variety of visitor experiences.

On-leash dog walking for up to three dogs would also be allowed on the Ocean Beach Trail along the Great Highway, from the Cliff House to Lincoln Boulevard, to Sloat Boulevard on the single-track path through the ice plants on the western curb along the Great Highway and on the future planned trail south of Sloat Boulevard. No dog walking would be allowed in the dunes nor on the beach within the SPPA, between Stairwell 21 and Sloat Boulevard. The beach within this area is an important shorebird habitat. Populations of the federally threatened western snowy plover occur south of Lincoln Way, specifically between July and May. The preferred alternative would provide maximum protection of shorebirds within the SPPA, including the federally threatened western snowy plover. Dog walking would also be prohibited on the beach south of Sloat Boulevard to the boundary with Fort Funston, as this area also has high shorebird activity compared to other beaches within GGNRA (Beach Watch 2009) and the beach is very narrow. This also provides continuity with management of no-dog experience on the northern section of the Fort Funston beach.

Overall, the preferred alternative would provide for a variety of visitor experiences (including both on- and off-leash dog walking), would protect park resources, and would be easily explainable and enforceable by park law enforcement staff.

Fort Funston

Alternative C was originally chosen as the preferred alternative. However, after reviewing public comments on the draft plan/EIS, the preferred alternative for the draft plan/SEIS was modified to slightly change the configuration and increase the size of the upland VSCA, which would provide a more functional loop connecting the upland and beach VSCAs. The revised upland VSCA would be a corridor from just north of the new accessible trail (to be built along the northern edge of the main parking lot from the Sunset Trail to the Chip Trail) that extends to, and includes the Funston Beach Trail North. This upland VSCA was revised again based on comments on the draft plan/SEIS to remove a small portion as described in the draft plan/SEIS (approximately less than 0.25 acre) between the Funston Trail and the

Sunset Trail. The grade of this portion of land is steep and would result in off-leash dogs running in an uncontrolled manner. To offset this loss of land, the southern uplands VSCA beginning at the main parking lot was widened to the east, resulting in no net loss of area for off-leash dogs. The Upper Funston VSCA now includes the following areas: the Funston Trail, and the upland area northeast of the Funston Trail, the Funston Beach Trail (North), the upland area east of (but not including) the Sunset Trail and north of the main parking lot, encompassing the Chip Trail and its eastern embankment, to the intersection at the water fountain with, and including, the Battery Davis Trail (West). This area may include a rare plant buffer along the eastern boundary. In order to provide more VSCA accessibility for the elderly and disabled, the surface of the Chip Trail between the accessible trail along the northern boundary of the main parking lot and the on-leash Sunset Trail, would be hardened and elevated above the sand. For those needing an accessible, hardened surface but preferring to experience the area without dogs off-leash, the Sunset Trail from the main parking lot to its intersection with the new Chip Trail, with its hardened surface, would allow dogs on leash and would not be included within the VSCA.

The beach VSCA would extend south of the Funston Beach Trail North to the Fort Funston boundary and would include the adjacent waters immediately offshore. Together, the two large VSCAs would provide the majority of a loop trail (completed by the on-leash use of the sand ladder), and a large amount of space to avoid overcrowding. On-leash dog walking would be required on the sand ladder for safety reasons related to the adjacent hang glider area and visitor safety on the sand ladder. The park would use landscape design solutions including fencing and natural barriers to separate the upland VSCA from the main parking lot and the adjacent trails where dog walking is not allowed (Funston Horse Trail). Landscape design solutions including gates or chicanes may be employed at intersections of on-leash and off-leash areas to maintain a separation. These two VSCAs and the trails that connect them (Funston Beach Trail North and Battery Davis Trail West) would be open to dog walkers with up to three dogs and for dog walkers with four to six dogs with an NPS-issued permit. GGNRA notes that eventually beach trails could erode away, especially in the north. The preferred alternative would allow the superintendent to replace an eroded trail with an on or off-leash, beach access trail if existing access is lost (please see the “Changes to Plan Implementation” section in chapter 2 for additional information on potential future changes). On-leash dog walking would be available on the Sunset Trail between the Great Highway south to the sand ladder; the Battery Davis Trail (East) between the Funston and John Muir trails; the John Muir trail and stairs: the accessible trail (to be built) that borders the northern edge of the main parking lot between the Sunset Trail and the Chip Trail, and a portion of the Sunset Trail south from the main parking lot to the public parking areas adjacent to the roadway south from the main entrance. [Note: part of the southern parking area will be reserved only for NPS administrative and San Francisco Unified School District Science Center parking]. At the Battery Davis (West) intersection with the Sunset Trail, where on-leash and off-leash areas intersect, landscape design solutions would create a functional separation between the two dog use trails; and, a second water fountain could be installed. These actions would minimize conflicts in use in this area. In the northern portion of Fort Funston, the Great Highway will be realigned. Once the realignment is complete, there will be an on-leash trail segment created to extend the Sunset trail to the Great Highway where there will be nearby parking. That section of the Sunset Trail from Funston Beach (North) trail to the Great Highway would only be open to dog walkers with up to three dogs. The on-leash, on-trail requirement for these trails provides an on-leash visitor experience, protection for the restored habitat areas; it also provides separation in the southern section of Funston from areas used by school groups and by the GGNRA maintenance staff who work at the Fort Funston facility. Dog walkers with four to six dogs and an NPS-issued permit would be allowed on all on-leash trails south of the Funston Beach Trail (North) and all of the VSCA areas; dog walkers with one to three dogs would be allowed on any of the dog walking trails and areas at the site. The western access trail to Battery Davis was eliminated as an on-leash area due to erosion, safety, and resource concerns.

In order to protect shorebirds, coastal bluffs, and bank swallows on the northern beach and to provide a no-dog experience on the beach, no dog walking would be permitted on the beach or coastal dunes north

of the Funston Beach Trail (North). In addition, no dogs would be allowed along the Funston Horse Trail to provide a no-dog visitor experience and protect restored and sensitive habitat, and the wildlife corridor.

GGNRA has sought to provide a variety of visitor experiences throughout the 22 areas addressed in this final plan/EIS, including Fort Funston. The revised preferred alternative would provide on-leash dog walking, off-leash dog walking, and no-dog experiences at this site. Fort Funston has the highest number of dog walkers of all the sites addressed by the dog management plan, thus the preferred alternative was adjusted to allow broad access for both on and off-leash dog walkers, while still providing a mix of visitor experiences, reducing visitor conflicts, and ensuring resource protection. No dogs on the Funston Horse Trail would also reduce the possibility of dog/horse conflicts at the site.

Overall, the preferred alternative would provide for a variety of visitor experiences, including on and off-leash dog walking, protect park resources, and would be explainable and enforceable by park law enforcement staff.

San Mateo County Sites (Alternative F)

Mori Point

Alternative C was originally chosen as the preferred alternative for Mori Point, which would allow on-leash dog walking on the Coastal Trail, Old Mori Road, and the southeastern corner section of Sharp Park beach within the GGNRA boundary. However, after reviewing public comments on the draft plan/EIS, the preferred alternative was slightly modified to add the Pollywog Trail. The preferred alternative was modified once again based on the comments on the draft plan/SEIS; the Mori Headlands Trail was added as an on-leash trail. A conditional use clause was added to that on-leash beach area in the southeastern corner of Sharp Park beach within GGNRA boundaries. It states that if the state and local entities with land management authority for Sharp Park beach decide to change dog-walking uses at Sharp Park beach, the 0.2 acres of beach administered by NPS may also be so designated by the superintendent. The preferred alternative provides adequate space for multiple user groups and provides access to the site from the adjacent neighborhood. On-leash dog walking along these trails would give dog walkers with up to three dogs direct access from the neighborhood and would provide trail options including a flat gradient trail to the beach's promenade, a coastal trail over Mori Point with a scenic headlands trail to the bluff, while still allowing a no-dog experience for other visitors. In addition, the Pollywog Trail and Old Mori Trail were improved to provide accessibility for elderly or disabled visitors. Fencing would be installed along the Pollywog Trail to provide protection for the federally threatened California red-legged frog. No dogs would be allowed on the Upper Mori Trail that connects to the Lishumsha Trail within sensitive species habitat; the steep Bootlegger's Steps would provide a safe, dog-free access trail to the Mori Point Headlands scenic bluff, and the Mori Peak Trail would provide a dog-free trail experience over Mori Point. [Note: the former Mori Bluff Trail is an unmaintained and eroding coastal trail that has been eliminated from the park's trail inventory due to safety concerns, and therefore is not included herein. The Timigtac Trail is also an unmaintained trail; however, it can be brought back on line following major realignments to improve its safety and use that are needed]. This would provide a variety of no-dog experiences and would protect the sensitive resources at the site. The site would be clearly signed and would be easily enforceable by park rangers and law enforcement.

No VSCAs would be established at this site in order to protect the listed species in the area including the California red-legged frog and San Francisco garter snake. NPS *Management Policies 2006* require that NPS "ensure that conservation will be predominant when there is a conflict between the protection of resources and their use" (NPS 2006a). A VSCA is inappropriate in areas where there is habitat for listed species that can be harmed by off-leash dogs. In addition, VSCAs would not be established on trails or fire roads to avoid creating safety hazards and inhibiting other user groups as discussed previously.

However, the beach area within the GGNRA boundary may become an off-leash area if other agencies change management of the area.

Overall, the preferred alternative would provide for a variety of visitor experiences, including on-leash dog walking, protect park resources, and would be easily explainable and enforceable by park law enforcement staff.

Milagra Ridge

Alternative C was originally chosen as the preferred alternative for Milagra Ridge. However, after reviewing public comments on the draft plan/SEIS, the preferred alternative was slightly modified to include on-leash dog walking on the Milagra Ridge Road up to the summit. The preferred alternative provides both a dog and no-dog experience at the site by allowing on-leash dog walking on the Fire Road within the park boundary from the Sharp Park Road entrance west to the Milagra Battery Trail and the Milagra Battery Trail from the Battery #244 (Bunker) to the parking lot at the western NPS boundary of the site at Connemara. These on-leash areas are open to dog walkers with up to three dogs. Visitors could have a no-dog experience on Milagra Ridge Road, Milagra Overlook Trail, and the Milagra Ridge Spur, which together extend across the site through mission blue butterfly habitat on single track trails. This alternative provides protection for species and is consistent with the parkwide policy regarding mission blue butterfly habitat areas. The preferred alternative would reduce further fragmentation of the habitat at this site.

A VSCA would not be established at Milagra Ridge as this would be inconsistent with the park not allowing VSCAs on trails, as described above. In addition, a VSCA would not provide sufficient protection for the mission blue butterfly habitat, California red-legged frogs, San Francisco garter snake, and other wildlife such as coyotes and bobcats occurring at the site. NPS *Management Policies 2006* require that NPS "ensure that conservation will be predominant when there is a conflict between the protection of resources and their use" (NPS 2006a). A VSCA is inappropriate in areas where there is core habitat, including habitat for listed species and habitat, which can be harmed by off-leash dogs.

Overall, the preferred alternative would provide for a variety of visitor experiences, including on-leash dog walking, protect park resources, and would be easily explainable and enforceable by park law enforcement staff.

Sweeney Ridge / Cattle Hill

Alternative C was originally selected as the preferred alternative for Sweeney Ridge and Cattle Hill, which allowed on-leash dog walking in Cattle Hill from the Baquiano Trail from Fassler Avenue to, and including, Farallon View Trail but did not permit dog walking in Sweeney Ridge. After reviewing public comments on the draft plan/EIS, the preferred alternative was modified to add on-leash dog walking at Sweeney Ridge on Sneath Lane and on the Sweeney Ridge Trail between the Portola Discovery Site and Nike Missile Site. Both of these trails are old roads, mostly paved and are located on the perimeter of the core habitat, and not directly adjacent to mission blue butterfly habitat. Dog walking has not changed for Cattle Hill; if NPS acquires management responsibility for this site, dog walking would be authorized on Baquiano Trail from Fassler Avenue gate to the intersection with, and including the Farallon View Trail, after giving public notice in accordance with 36 CFR 1.7. On-leash dog walking for up to three dogs would be allowed at Cattle Hill and Sweeney Ridge. No dog walking would be allowed on the Baquiano Trail beyond its intersection with the Farallon View Trail, on the Sweeney Ridge Trail north of the Nike Missile Site and south of the Portola Discovery Site, the Notch Trail, Sweeney Horse Trail, or Sweeney Meadow Trail. These trails pass through areas of contiguous, protected core habitat that include mission blue butterfly habitat and habitat for a diverse array of wildlife. Dog walking in this area would conflict

with a primary NPS mandate to protect resources. This site is contiguous with the San Francisco watershed, which is closed to public access, including dog walking. The preferred alternative would be clear to the public and would be easily enforceable by park law enforcement staff.

VSCAs would not be established at the Sweeney Ridge and Cattle Hill site. The Sweeney Ridge site contains core habitat, mission blue butterfly habitat, and a diversity of wildlife as confirmed by recent surveys. The majority of the Cattle Hill and Sweeney Ridge site is managed to protect endangered species and the core habitat created by the large contiguous natural landscape extending into the San Francisco Public Utilities Commission Peninsula Watershed. NPS *Management Policies 2006* require that NPS "ensure that conservation will be predominant when there is a conflict between the protection of resources and their use" (NPS 2006a). A VSCA is inappropriate in areas where there is core habitat, including habitat for listed species, which can be harmed by off-leash dogs. In addition, establishing VSCAs at these sites would be inconsistent with the park not allowing VSCAs on trails as described above.

GGNRA seeks to provide a mix of visitor uses and experiences at the Cattle Hill and Sweeney Ridge site, but must also assure that park resources and values are protected. The preferred alternative protects the mission blue butterfly habitat and large area of undisturbed contiguous habitat that is rare and contains wildlife that could be disturbed by the presence of dogs.

Overall, the preferred alternative would provide for a variety of visitor experiences, including on-leash dog walking, protect park resources, and would be easily explainable and enforceable by park law enforcement staff.

Rancho Corral de Tierra

Alternative B was originally chosen as the preferred alternative for this site based on the protection of resources in an area of contiguous habitat (McNee State Park, San Pedro Valley County Park and the San Francisco Watershed) as well as consistency with management in the adjacent State Park. However, based on comments on the draft plan/SEIS, the preferred alternative was modified. The preferred alternative would allow on-leash dog walking for up to three dogs on designated trails in three areas, Montara, El Granada, and Moss Beach. Trails in Montara include Old San Pedro Mountain Road, LeConte Trail, Corona Pedro Trail, and Farallon Cutoff from the park boundary in the west to the northern intersection with Corona Pedro Trail. Dogs would not be allowed east on the Farallon Cutoff beyond the Corona Pedro Trail to provide a dog-free trail experience that later can connect to the Alta Vista trail and to further protect Hickman's Potentilla habitat. On-leash trails permitted in the El Granada area include the Denniston Ridge Trail between the San Carlos Trail and its intersection with the Clipper Ridge Trail, the Clipper Ridge Trail, the Memorial Loop, the Almeria Trail, and the San Carlos Trail. On-leash dogs would be allowed on the trails in the Moss Beach area on the Vicente Ridge Trail and the Ranchette Trails. The preferred alternative would provide a variety of visitor experiences, including on-leash dog walking; protect park resources; and would be easily explainable and enforceable by park law enforcement.

The Flat Top area was previously considered but dismissed as an alternative as well, due in part to the steepness of the access trail, and its potential for a future restoration site. GGNRA received many public comments on both the draft plan/SEIS and proposed rule requesting off leash areas in San Mateo County. GGNRA is generally unable to allow off leash on trails, as discussed previously in this chapter, which leaves most areas in San Mateo County off limits to a VSCA since the character of GGNRA lands in San Mateo is primarily comprised of trails, not former military sites or coastal beaches such as in San Francisco and Marin counties. Flat Top, an approximately 3-acre bowl in a former quarry, is one of the only remaining areas that would meet basic voice and sight control requirements – it is not a trail, the area is already disturbed, and sensitive species have not been found in this area despite it being part of a broad

critical habitat designation covering much of coastal California. For these reasons, and in an effort to provide an off leash opportunity in San Mateo County in regards to off-leash, GGNRA removed this alternative from considered but dismissed and into the final plan/EIS preferred alternative, with identification of possible parking restrictions for the county to consider. The VSCA at Flat Top would not be a regional attractor due to limited parking, its location, and topography. This site would require that dog walkers keep their dogs on leash on the approximately half-mile, steep trail connecting the neighborhood trailhead to the VSCA site.

Cost of Implementation of the Preferred Alternative

The total costs of implementing the preferred alternative are estimated at $2,587,194 for the transition years depending on the extent of use of existing staff and level of improvements. The bulk of these costs are associated with the hiring of additional personnel for implementing the dog management plan and the costs of developing and implementing both the monitoring program and landscape design solutions for use boundary demarcations. For a more detailed explanation of personnel costs under the preferred alternative, see the “Park Operations” section in chapter 4.

TABLE 4. SUMMARY OF ALTERNATIVE ELEMENTS BY COUNTY, NORTH TO SOUTH

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Common to All Action Alternatives: • Dog walking allowed only in areas designated for either on-leash or VSCA* dog walking. • VSCAs may be closed periodically to allow re-growth of vegetation. • All dogs brought into park must be licensed in county of residence and have current rabies vaccinations. • Maximum number of dogs per dog walker is three; at sites where permitted dog walking is allowed (Alta Trail, Rodeo Beach, Fort Baker, Fort Mason, Crissy Field, Baker Beach, and Fort Funston), NPS-issued permits allow up to six dogs. • No off-trail dog walking; no dogs in campgrounds or public buildings; on leash in parking lots, picnic areas and on paved, public roads unless otherwise noted. • Service animals accompanying a person with a disability, as defined by federal law and Department of Justice regulations (28 CFR 36.104), are allowed wherever visitors or employees are allowed. • Monitoring-based management program. *The concept of a VSCA walking area as a defined area where off-leash dog walking is allowed only under specific guidelines came from discussions in the Negotiated Rulemaking Committee for Dog Management at GGNRA.						
Permits for More than three Dogs – Commercial and Individual Dog Walkers	No permits.	All dog walkers, including commercial dog walkers, allowed up to three dogs per person. All dogs must be on leash. No permit is required.	All dog walkers, including commercial dog walkers, allowed with up to 3 dogs per person. Commercial dog walkers and private individuals with more than 3 dogs can obtain a dog walking permit; limit is 6 dogs. In a VSCA, permit holders may have up	No commercial dog walking allowed and no permits for more than 3 dogs.	Same as alternative C.	All dog walkers, including commercial dog walkers, allowed with up to 3 dogs per person. Commercial dog walkers and private individuals with more than 3 dogs can obtain a dog walking permit; limit is 6 dogs. In a VSCA, permit holders may have up to

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Permits for More than three Dogs – Commercial and Individual Dog Walkers, continued			to 6 dogs off leash. Permits would restrict use by time and area. Permitted dog walking would not be authorized in picnic areas. Permits would only be issued for: Alta Trail, Rodeo Beach, Fort Baker (excluding Drown Fire Road), Fort Mason, Crissy Field, Baker Beach, and Fort Funston.			6 dogs off leash as designated in an NPS permit. Permits would restrict use by time and area. Permitted dog walking would not be authorized in picnic areas. Permits would only be issued for: Alta Trail (Alta Trail to junction with Oakwood Valley Trail, excluding Orchard and Pacheco Fire Roads), Rodeo Beach, Marin Headlands (Lagoon Trail along Mitchell Road only from Rodeo Beach parking lot to pedestrian bridge), Fort Baker(excluding Cavallo Lodge area), Fort Mason (excluding grass areas of Great Meadow), Crissy Field (direct access segments of the Promenade between Airfield and Central beach and between East Beach parking

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Permits for More than three Dogs – Commercial and Individual Dog Walkers, continued						and closest access to Central beach with corresponding beach access trails, Central beach, Airfield, and Mason Street multi-use path (pedestrian lane); Baker Beach (North Beach, Baker Beach Access Trails #1 and #2, the segment of the Coastal Trail connecting the northern parking lot and Baker Beach Access Trail #1, and the parking lots with connecting trail between them); and Fort Funston (excluding the Coastal Trail north of the Funston Beach Trail North).

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Marin County Sites						
Stinson Beach (parking lots and north and central picnic areas only)	On leash.	Same as alternative A.	Same as alternative A.	No dogs.	Same as alternative A.	On leash in north and central picnic areas with on-leash path to Upton Beach added from north parking lot. In instances when the South Parking Lot floods, impeding access to the South Picnic Area, the Central Picnic Area would become dog-free until access to the South Picnic Area could be restored.
Homestead Valley	Entire site on leash or under voice control.	Homestead Fire Road, and neighborhood connector trails (Homestead Trail and Homestead Summit Trail) to be designated in the future: on leash.	Same as alternative B.	Homestead Fire Road: on leash.	Same as alternative B.	Homestead Fire Road, Homestead Summit Trail, Homestead Trail, and Eagle Trail: on leash

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Alta Trail **Orchard Fire Road** **Pacheco Fire Road**	On leash or under voice control from Marin City to Oakwood Valley.	Alta Trail: on leash to Orchard Fire Road. Orchard and Pacheco fire roads: on leash.	Same as alternative B.	No dogs.	Alta Trail: on leash to junction with Morning Sun Trail (see Marin Headlands Trails alternative E for description of Morning Sun Trail). Orchard and Pacheco fire roads: on leash.	Alta Trail from Donahue Street to Morning Sun Trail, Orchard and Pacheco Fire Roads, and Rodeo Avenue Trail: on leash
Oakwood Valley	Oakwood Valley Fire Road and Oakwood Valley Trail from junction with the Fire Road to junction with Alta Trail: on leash or under voice control. Oakwood Valley Trail from trailhead to junction with Oakwood Valley Fire Road: on leash.	Oakwood Valley Fire Road and Oakwood Valley Trail: on leash to junction of the trail and fire road.	Oakwood Valley Fire Road: VSCA to junction with Oakwood Valley Trail. Double gates at both ends and with continuous fencing to protect sensitive habitat. Oakwood Valley Trail: on leash from junction with Fire Road to new gate at junction with Alta Trail.	Same as alternative B.	Oakwood Valley Fire Road: VSCA to junction with Oakwood Valley Trail. Double gates at both with non-continuous fencing where needed to protect sensitive habitat. Oakwood Valley Trail: on leash from junction with Fire Road to junction with Alta Trail.	Oakwood Valley Fire Road and Oakwood Valley Trail to the junction of Alta Trail, Rhubarb Trail (community connecting trail segment) from the park boundary to Tennessee Valley Road: on leash. Oakwood Meadow Trail: no dogs.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Muir Beach	Beach only: on leash or under voice control. Bridge and path to beach: on leash.	Beach, bridge and path to beach, and Muir Beach Trail (trail to be built as part of Muir Beach Wetland and Creek Restoration Project): on leash.	Same as alternative B.	Proposed Muir Beach Trail: on leash.	Beach South of Entrance Path from parking lot: VSCA. Proposed Muir Beach Trail, bridge, and path to beach: on leash.	Beach, bridge, Kaashi Way, Muir Beach Trail, and Pacific Way access trail: all on leash. Fencing along the dunes and lagoon. No dogs in surface waters when lagoon and ocean are connecting.
Rodeo Beach / South Rodeo Beach	Both beaches: on leash or under voice control. Footbridge and access trail to beach: on leash.	Both beaches: on leash. Footbridge and access trail to beach: on leash.	Rodeo Beach: VSCA extending south to bluff. Footbridge to beach: on leash.	Rodeo Beach North of Footbridge: on leash. Footbridge to beach: on leash.	Both beaches: VSCA. Footbridge and access trail to beach: on leash.	Rodeo Beach: VSCA south to the sea stacks, pedestrian footbridge and access steps to beach: on leash. No dogs in surface water or access steps when ocean and lagoon are connecting.

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Marin Headlands Trails Trails previously opened to dog walking open to consideration of on leash or no dogs, including but not limited to: • Coastal Fire Road from McCullough Road to Muir Beach • North Miwok Trail from Tennessee Valley to Highway 1 • County View Trail off the Miwok Fire Road • Miwok Fire Road to Wolf Ridge to Hill 88 • Lagoon Loop Trail • South Rodeo Beach Trail.	On leash or voice control: • Coastal Trail: Golden Gate Bridge to Hill 88-includes Lagoon Loop Trail • Coastal Trail, Wolf Ridge, Miwok Trail Loop • Old Bunker Fire Road Loop (includes section of Coastal Trail) On leash only: • Coastal Trail: Hill 88 to Muir Beach • Batteries Loop Trail • North Miwok Trail: from Tennessee Valley to Highway 1 • County View Trail • Marin Drive.	No dogs.	On leash: • Lower Rodeo Valley Trail Corridor: Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via North Lagoon Loop Trail, Miwok Trail, and Rodeo Valley Trail. Includes connector from Rodeo Valley Trail to Smith Road Trailhead. • Old Bunker Fire Road Loop (includes section of Coastal Trail) • Batteries Loop Trail.	Same as alternative B.	On leash: • Conzelman Coastal Trail from Highway 101 to Rodeo Beach parking lot, following Conzelman Coastal Trail to McCullough Road intersection and then the Coastal Trail Bike route – including Julian Road – to Rodeo Beach Parking lot • Old Bunker Fire Road Loop (includes section of Coastal Trail) • Batteries Loop Trail • North Miwok Trail: from Tennessee Valley to Highway 1 • County View Trail • Marin Drive • Rodeo Avenue Trail • Morning Sun Trail.	On leash: • Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via North Lagoon Loop Trail, Miwok, and Bobcat Trail segments connecting Rodeo Valley and Lagoon Trails only, and Rodeo Valley Trail. Includes connector from Rodeo Valley Trail to Smith Road Trailhead • Old Bunker (Fire) Road Loop (includes section of Coastal Trail) • Batteries Loop Trail • Rodeo Avenue Trail • Morning Sun Trail

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Fort Baker	On leash in areas where dogs allowed.	Drown Fire Road, Bay Trail (not including Battery Yates Loop), Vista Point Trail (to be built), Lodge/Conference Center grounds, and parade ground: on leash.	Drown Fire Road, Bay Trail including Battery Yates Loop Road, Vista Point Trail (to be built), Lodge/Conference Center grounds, and parade ground: on leash.	Lodge/Conference Center grounds, Bay Trail (not including Battery Yates Loop) and Vista Point Trail (to be built): on leash.	Same as alternative C.	Bay Trail from and including Conzelman parking lot to northern boundary of site: on leash. Lodge/Conference Center grounds, and parade ground: on leash. Fort Baker Trail and trails that connect the Fort Baker Trail to the Bay Trail: on leash.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
San Francisco County Sites						
Upper and Lower Fort Mason	On leash.	On leash in all areas where allowed (Great Meadow, Laguna Green, lawns, sidewalks, paved trails and open areas around housing).	Inner Great Meadow and Laguna Green: VSCAs with barriers to separate VSCAs from other uses. Lawn below Laguna Street path: on leash. All sidewalks/paved trails/open areas around housing: on leash.	Great Meadow: on leash. Laguna Green: VSCA. Lawn below Laguna Street path: on leash. All sidewalks/paved trails/ open areas around housing: on leash.	Same as alternative C.	Great Meadow paths and grass, sidewalks/ paved trails/grass areas facing Fort Mason Quad housing, Shafter court triangulated grass area, and median grass areas on Franklin or east of Bldg. 101: on leash. Laguna Green: VSCA with fencing or vegetative barrier. Lawn along Laguna Street path, Fort Mason Bay Trail, Black Point Battery Trail: on leash.
Crissy Field Wildlife Protection Area	Voice control except for seasonal leash restriction.	No dogs.	Same as alternative B.	Same as alternative B.	On leash.	Same as alternative B.
Crissy Field	Promenade (East Beach to the Warming Hut): voice control.	Promenade: on leash.	Promenade: same as alternative B.	Promenade: same as alternative B.	Promenade: same as alternative B.	Promenade: same as alternative B.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Crissy Field, continued	Airfield: voice control.	Airfield: on leash.	Airfield – middle section: VSCA between the easternmost and westernmost north/south paths. Reduce or preclude VSCA as dictated by special event. Airfield – eastern and western section: on leash east of easternmost north/south path and west of westernmost north/south path.	Airfield – western section: VSCA west of easternmost north/south path Reduce or preclude VSCA as dictated by special event. Airfield – eastern section: on leash east of easternmost north/south path.	Airfield: VSCA. Reduce or preclude VSCA as dictated by special event.	Airfield – central section: VSCA bounded by on-leash paths on the eastern and western ends and on-leash buffers on the northern and southern boundaries. May reduce or preclude VSCA depending on nature and size of special events. Airfield – eastern section: on leash Airfield – western section: no dogs.
	East and Central Beaches: voice control.	East and Central Beaches: on leash Paths to Central Beach: on leash.	Central Beach: VSCA. Paths to Central Beach: on leash.	No dogs.	Central Beach: VSCA. East Beach: on leash. Paths to Central Beach: on leash.	Central Beach: VSCA with fencing along the dunes and at western and eastern ends with central accessible platform to sand. Paths to Central Beach: on leash.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Crissy Field, continued	Trails and grassy areas near East Beach and around Old Coast Guard Station: voice control.	Trails and grassy areas near East Beach, around Old Coast Guard Station, and on Mason Street Bike Path: on leash.	Same as alternative B.	Same as alternative B except no dogs in the West Bluff picnic area.	Same as alternative B.	Same as alternative B, except no dogs in the West Bluff Picnic Area.
Fort Point Promenade / Fort Point National Historic Site Trails	Fort Point Promenade, Battery East Trail, Andrews Road, Presidio Promenade, and grassy area near restrooms: on leash.	Same as alternative A.	Same as alternative A.	Battery East Trail: on leash.	Same as alternative A.	Fort Point Promenade, Battery East Trail, Andrews Road, Presidio Promenade, Coastal Trail, Battery East parking lot, and Warming Hut picnic area: on leash. West Bluff Picnic Area: no dogs

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Baker Beach and Bluffs to Golden Gate Bridge	Beach north of Lobos Creek: voice control. All trails except Batteries to Bluffs Trail: on leash.	Beach: on leash. All Trails except Batteries to Bluffs Trail and Battery Crosby Trail: on leash.	Same as alternative B.	Beach South of North End of North Parking Lot: on leash. Trails To Beach South of North End of North Parking Lot and Coastal Trail: on leash.	Beach South of North End of North Parking Lot: VSCA. Beach North of North End of North Parking Lot: on leash. All Trails except Batteries to Bluffs Trail and Battery Crosby Trail: on leash.	Beach north of Baker Beach Access Trail #2: on leash. Coastal Trail, Beach Access Trails #1 and #2, access trails from 25th Avenue entrance and southern non-NPS beach to the Baker Beach southern parking lot, and trail connecting the northern and southern parking lots: on leash. North Picnic Area: on leash. South Picnic Area: no dogs
Fort Miley	East and West Fort Miley: voice control.	No dogs. West Fort Miley: no dogs in picnic area due to no dog walking access.	East Fort Miley: on leash in east side trail corridor. West Fort Miley: no dogs in picnic area due to no dog walking access.	Same as alternative B.	East Fort Miley: on leash in east side trail corridor. West Fort Miley: on leash on road only.	Same as alternative C.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Lands End	Voice control.	El Camino del Mar, Lands End Coastal Trail and connecting trails and steps: on leash.	Same as alternative B.	El Camino del Mar Trail: on leash. Lands End Coastal Trail: on leash from Lands End Lookout parking lot to junction with, and on, connecting trail and steps to El Camino del Mar Trail.	Same as alternative B.	El Camino del Mar from eastern park boundary to the Memorial parking lot; Lands End Coastal Trail and connecting trails and steps: on-leash, except West Fort Miley Trail, Sutro Bath and Mile Rock trails which are no dog.
Sutro Heights Park	On leash.	Paths and parapet: on leash.	Same as alternative B.	No dogs.	Paths, parapet, and lawns: on leash.	Paths, parapet, and lawns: on leash. Formal gardens: no dog.
Ocean Beach Snowy Plover Protection Area (Stairwell 21 to Sloat Boulevard; Area between Lincoln Way and Sloat Boulevard is being surveyed by the City and County of San Francisco to determine land authority)	Voice control with seasonal leash restriction, on leash on Ocean Beach Trail along Great Highway.	Ocean Beach Trail along Great Highway: on leash.	Same as alternative B.	Same as alternative B.	Beach and Ocean Beach Trail along Great Highway: on leash.	Same as alternative B.

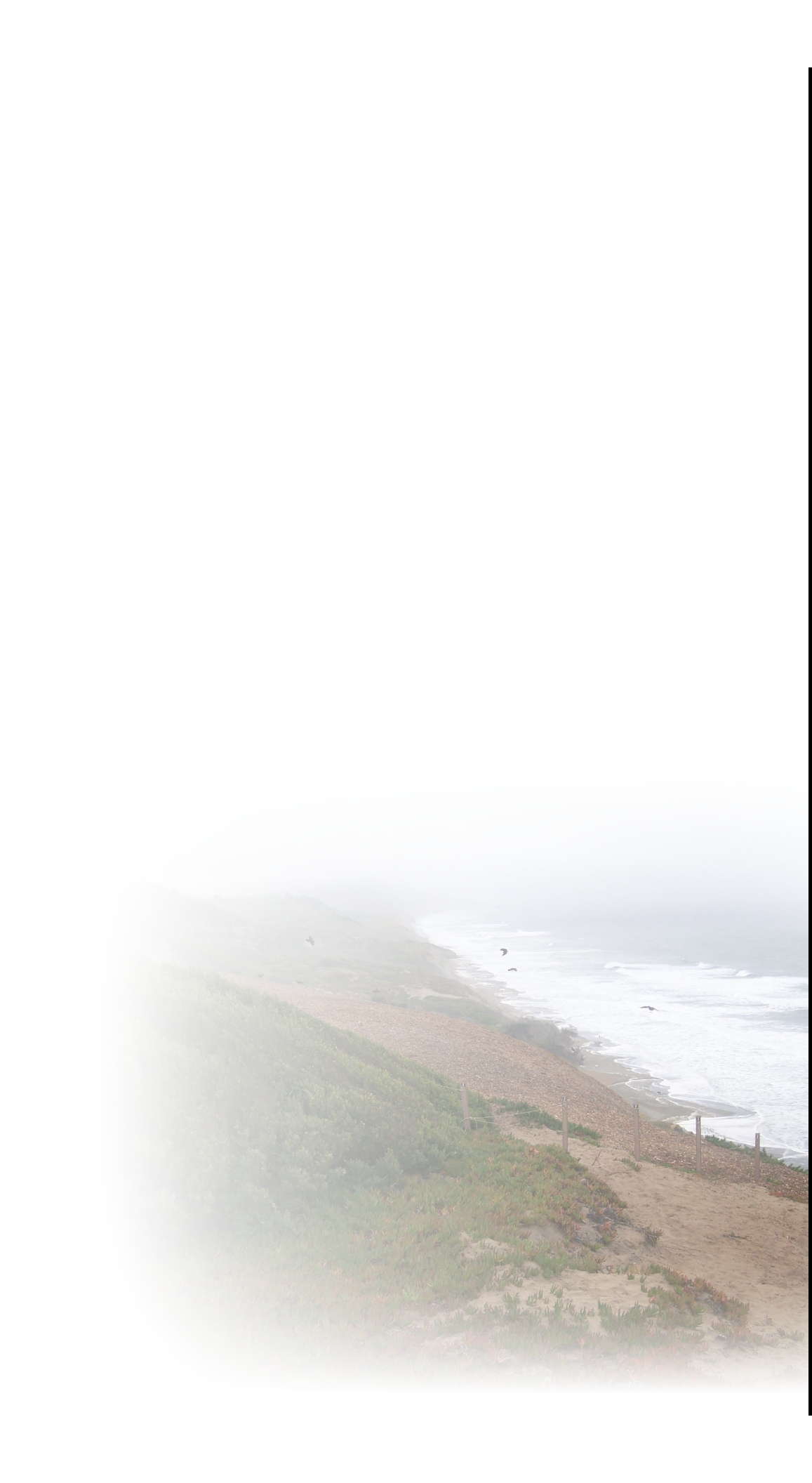
GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Ocean Beach **North of Stairwell 21**	North of Stairwell 21: voice control.	North of Stairwell 21: on leash.	North of Stairwell 21: VSCA.	Same as alternative B.	Same as alternative C.	Beach north of Stairwell 21: VSCA. Beach access stairwells from #1-#21: on-leash. Ocean Beach Trail from Cliff House to Lincoln Blvd: on-leash
South of Sloat Boulevard	South of Sloat Boulevard: voice control.	South of Sloat Boulevard: on leash.	South of Sloat Boulevard: no dogs.	Same as alternative C.	Same as alternative B.	South of Sloat Boulevard: on leash.
Fort Funston (excluding areas closed by fence or signs)	Beach: voice control with seasonal advisory at the foot of northernmost bluffs when bank swallows are nesting (April 1–August 15).	Beach: on leash with seasonal advisory at the foot of northernmost bluffs when bank swallows are nesting (April 1–August 15).	Beach: south of Funston Beach Trail (North): VSCA. North of Funston Beach Trail (North): no dogs.	Beach: south of Funston Beach Trail (North): on leash. North of Funston Beach Trail (North): no dogs.	Beach: south of Funston Beach Trail (North): VSCA. North of Funston Beach Trail (North): on leash seasonal advisory at the foot of northernmost bluffs when bank swallows are nesting (April 1–August 15).	Same as alternative C.
	South of Main Parking Lot, including all trails: voice control.	South of Main Parking Lot: on leash on all trails not closed to dogs.	South of Main Parking Lot: on leash on Funston Beach Trail (South) and Sunset Trail.	Same as alternative C.	Same as alternative C.	Same as alternative C.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Fort Funston (excluding areas closed by fence or signs), continued	North of Main Parking Lot, including all trails: voice control except for fenced wildlife/habitat protection area.	North of Main Parking Lot: on leash on all trails not closed to dogs.	North of Main Parking Lot: VSCA between (and not including) Chip Trail, Sunset Trail, and parking lot. On leash on all trails except no dogs on: Sunset Trail from parking lot to junction with Chip Trail, and Funston Horse Trail.	North of Main Parking Lot: VSCA with fencing in disturbed area north of the water fountain. All designated trails on leash except no dogs on northern end of Sunset Trail (closed to visitors due to erosion) and on Funston Horse Trail.	North of Main Parking Lot: VSCA corridor from just north of the new trail (to be built) along the northern edge of the parking lot that extends to, and includes the Funston Beach Trail (North). The VSCA corridor includes the Chip Trail and sections of the Sunset Trail, Funston Road, and Battery Davis Trail – all north of the parking lot. The VSCA also extends into the disturbed area northeast of the Funston Beach Trail (North). Harden Chip Trail to improve accessibility. The VSCA will be separated by barriers from new trail to be built along north edge of parking lot and no dog trails/areas.	North of Main Parking Lot: VSCA corridor from just north of the new, accessible (to be built) trail along the northern edge of the parking lot that is bordered on west by on-leash Coastal Trail and east above embankment extending north to, and including the Funston Beach Trail (North). The VSCA corridor includes the Chip Trail, the Battery Davis (West) trail and the Funston Trail – all north of the main parking lot. The VSCA also extends into the disturbed bowl area northeast of the Funston Trail. The Chip Trail will be harden and elevated above the sand to improve accessibility.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Fort Funston, (excluding areas closed by fence or signs), continued					On leash on all trails outside VSCA except no dogs on Funston Horse Trail.	VSCA will be separated by landscape design barrier solutions including fencing from the new trail to be built along north edge of parking lot and between off-leash, on-leash, and no dog trails/areas. On leash on all trails outside VSCA except no dogs on Funston Horse Trail and in the Area between the hang gliding area and southern parking lot (except for the Sunset Trail). New on-leash trail to be built to connect Coastal Trail and Horse Trail to the Great Highway north and planned parking area.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
San Mateo County Sites						
Mori Point	On leash on all trails.	Mori Coastal Trail and beach within GGNRA boundary: on leash.	Mori Coastal Trail, Old Mori Trail, and beach within GGNRA boundary: on leash.	No dogs.	Mori Coastal Trail, Old Mori Trail, Pollywog Trail and beach within GGNRA boundary: on leash.	Mori Coastal Trail, Old Mori Trail, Pollywog Trail, Mori Headlands Trail, and beach within GGNRA boundary: on leash.
Milagra Ridge	On leash on trails.	Fire Road, trail to overlook and WW II bunker, and Milagra Battery Trail: on leash.	Same as alternative B.	No dogs.	Same as alternative B with addition of trail to top of hill.	Fire Road, to summit and WW II Battery #244 (Bunker), and Milagra Battery Trail: on leash.
Sweeney Ridge / Cattle Hill – Combined (adjacent properties that share a trail system)	Sweeney Ridge: on leash on all trails except the Notch Trail, which is closed to dogs. Cattle Hill: not currently managed by GGNRA.	Sweeney Ridge and Cattle Hill: No dogs.	Sweeney Ridge: No dogs. Cattle Hill: Baquiano Trail from Fassler Avenue to, and including, Farallon View Trail: on leash.	Same as alternative B.	Sweeney Ridge: Sneath Lane, Sweeney Ridge Road from Portola Discovery site to Notch Trail, and Mori Ridge Trail: on leash. Cattle Hill: Baquiano Trail from Fassler Avenue to, and including, Farallon View Trail: on leash.	Sweeney Ridge: Sneath Lane and Sweeney Ridge Trail between Portola Discovery Site and Nike Missile Site: on leash. Cattle Hill: Baquiano Trail from Fassler Avenue to, and including, Farallon View Trail: on leash.

GGNRA Site	Alternative A: No Action (36 CFR 2.15, 36 CFR 7.97 (d); 1979 Pet Policy; GGNRA Compendium)	Alternative B: NPS Leash Regulation (36 CFR 2.15 and GGNRA Compendium)	Alternative C: Emphasis on Multiple Use – Balanced by County (Contains Negotiated Rulemaking Committee Consensus)*	Alternative D: Most Protective of Resources and Visitor Safety	Alternative E: Most Dog Walking Access / Most Management Intensive (Contains Negotiated Rulemaking Committee Consensus and Elements of the 1979 Pet Policy that Meet Purpose, Need and Objectives of the Plan)*	Alternative F: NPS Preferred Alternative
Rancho Corral de Tierra	On leash.	On leash on designated trails in two areas open to dog walking near Montara and El Granada.	Same as alternative B, with a VSCA between Le Conte and Tamarind Street, across the street and east of Farallone View School.	On leash on the two existing San Mateo County trails: Old San Pedro Mountain Road and the Farallon Cutoff in Montara.	Same as alternative C.	VSCA at Flat Top in the El Granada area. On leash on designated trails in three areas open to dog walking. Montara: Farallon Cutoff to northern intersection with Corona Pedro trail; Old San Pedro Mountain Road, Le Conte Trail, and Corona Pedro Trail. Moss Beach: Vicente Ridge Trail and Ranchette Trail. El Granada: Denniston Ridge Trail, Memorial Loop, Almeria Trail, and Clipper Ridge Trail.



Affected Environment

CHAPTER 3: AFFECTED ENVIRONMENT

INTRODUCTION

This "Affected Environment" chapter describes the resources of Golden Gate National Recreation Area (GGNRA or park) that could be affected as a result of implementation of any of the dog management alternatives. The resource descriptions provided in this chapter serve as the baseline against which to compare the potential effects of the management actions considered in this *Final Dog Management Plan / Environmental Impact Statement* (final plan/EIS). The resource topics presented in this chapter and the organization of the topics correspond to the resource impact discussions contained in the "Environmental Consequences" chapter. The general project setting has been included to provide the background necessary to understanding the park resources and environment. The following resource topics are included: vegetation, soils, and wildlife, special-status species, cultural resources, visitor use and experience, park operations, and human health and safety.

The resource descriptions provided in this chapter serve as the baseline against which to compare the potential effects of the management actions considered in this final plan/EIS.

GENERAL PROJECT SETTING

GGNRA was created from federal lands and state, city, and private lands. Within the park's boundary established by Congress are 80,033 acres in three counties: Marin, San Francisco, and San Mateo (see map 1). The northern (Marin County) areas of the park are separated from the southern (San Francisco and San Mateo) park areas by the Golden Gate entrance to San Francisco Bay. Of the total acreage within the park's boundary, GGNRA owns and manages 10,786 acres in Marin County, 1,278 acres in San Francisco County, and 6,842 acres in San Mateo County; GGNRA also manages Fort Point National Historic Site (29 acres) and Muir Woods National Monument (523 acres). The park lands border on lands with a wide range of ownership type and land use, a mix of private residential and agricultural lands, public watershed, parks, and open space. Forty-eight percent of Marin County is held as park lands, open space, and municipal watershed. GGNRA Marin lands include much of the coastline and southern portion of that county. Park lands in San Francisco border both private and commercial properties as well as City of San Francisco properties. In San Mateo County, GGNRA park lands are primarily located in the northern portion of the county, adjacent to the city of Pacifica. Because of the urban setting of GGNRA, some park parcels may be close but not contiguous to other parcels, resulting in many separate park sites. GGNRA supports numerous programs that enhance and/or restore natural resources in different areas of the park and under different contexts. For this chapter and hereafter, these programs will be referred to as park stewardship programs and will encompass such park-sponsored and volunteer programs as the Site Stewardship Program, the Presidio Park Stewards, the Habitat Restoration Team, the Invasive Plant Patrol, the Trails Forever Program, Golden Gate National Parks Conservancy, the Headlands Institute, and the Presidio Trust. The lands in San Francisco known as the "Presidio" are managed by both National Park Service (NPS) and this project's cooperating agency, the Presidio Trust. Congress established the Presidio Trust in 1996, which works with NPS to manage the Presidio lands. The Presidio Trust manages the interior 80 percent of lands (known as Area B) and NPS manages the coastal areas (known as Area A). This chapter primarily discusses resources in Area A, the Presidio lands managed by NPS. However, other nearby parks that provide dog walking areas but are located outside of GGNRA (including Area B of the Presidio), are discussed at the end of this chapter. As a result of this final plan/EIS, impacts to these nearby dog walking areas are expected. Therefore, a short description of nearby dog walking areas is

included that discusses natural resources present, the location of the areas, the size of on-leash and off-leash areas, amenities (if any) present, and recreational opportunities.

GGNRA is part of the Golden Gate Biosphere Reserve.

GGNRA is part of the Golden Gate Biosphere Reserve, which was designated by the United Nations and recognized internationally for its importance to the conservation of biodiversity, sustainable development, and relevant education and research. The Golden Gate Biosphere Reserve includes over 2 million acres of protected lands and waters administered by a variety of agencies and organizations (NPS 2005b, 4). In addition, GGNRA lies in the California Floristic Province, a Nature Conservancy biodiversity hotspot. Biodiversity hotspots are identified when a high number of endemic species are found in an area. Of the nearly 3,500 species of plants found in the California hotspot, 61 percent are endemic to the area (CAS 2005, 2).

This "Affected Environment" chapter addresses the topics that were not dismissed from further consideration as described in the "Purpose and Need for Action" chapter for the planning area. A detailed discussion regarding natural resources includes vegetation, soils, wildlife, and special-status species. The human environment section follows and discusses cultural resources, climate change, visitor use and experience, park operations, and human health and safety. Existing conditions include ongoing effects from other park uses including but not limited to hiking, running, biking, picnicking, beachgoing, and equestrian riders.

DOG-RELATED INCIDENTS AT GGNRA

Under the U.S. Department of the Interior, NPS rangers or U.S. Park Police can submit a "criminal incident record" for an incident including any charges that have been filed for visitors on park property. These records are referred to as incident reports and include violations of park regulations and/or applicable portions of 36 CFR that result in a citation, verbal warning, or a written warning by NPS rangers or U.S. Park Police. Dog-related incident reports were compiled for GGNRA using the criminal incident reports written by both divisions from 2001 through 2011. The following paragraphs describe the methods used for compiling, analyzing, and presenting these data.

To fully describe dog-related incidents that have occurred at GGNRA, the annual law enforcement incident databases for years 2001 through 2011 were obtained for this analysis. For these years, the annual incident databases were edited to remove all incident reports that did not occur on GGNRA lands, were administrative in nature (e.g., reports documenting overtime, radio issues, alarm off, maintenance needed), or did not include reports of incidents or injuries involving visitors or staff. Incident types were grouped into categories to reflect the overarching incident types occurring within GGNRA (e.g., assist citizen, search and/or rescue, drugs). Incident reports were then sorted by these incident categories. A percentage for each incident category was obtained for GGNRA as a whole (number of specified incident type / total incidents) for each of the 11 years of the analysis. Incident categories for which the individual incident percentage was <5 percent were lumped into the "Other" category for presentation purposes.

Table 5 compares the number of total dog-related incident reports to other types of incident reports recorded within GGNRA. From 2001 through 2011, a total of 4,932 dog-related incident reports were recorded at the park, which represents 11 percent of all violations at GGNRA. Dog-related incident reports that have been recorded at GGNRA for the past 10 years have remained constant at 11 percent. From 2001 through 2005, the total number of dog incident reports was 2,233; from 2006 through 2011, the total number of dog incident reports was 2,699. In both cases, those numbers were approximately 11 percent of total incidents during those years (table 5).

TABLE 5. NUMBER AND TYPES OF INCIDENT REPORTS WITHIN GGNRA, 2001–2011

Type of Incident	Number of Incidents by Year*											Total
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
Dog-related	357	330	566	687	293	236	543	498	576	378	468	**4,932**
Assist	496	535	658	704	809	688	780	851	1,050	1,027	1,024	**8,622**
Camping	270	264	258	334	290	287	309	267	244	188	148	**2,859**
Drugs	692	387	411	453	395	259	373	478	607	466	394	**4,916**
Fire	151	215	181	407	509	582	343	157	161	99	91	**2,896**
Injury	241	257	241	219	158	199	217	190	206	228	202	**2,358**
Larceny	158	189	178	182	193	215	244	242	213	175	160	**2,149**
Suspicious	172	190	173	179	165	156	140	163	148	156	123	**1,765**
Trespassing	131	87	143	210	222	209	214	159	151	199	127	**1,765**
Other	1,137	1,101	1,163	1,394	1,332	1,112	1,348	1,233	1,296	1,096	1,140	**13,352**
Total	**3,805**	**3,555**	**3,972**	**4,769**	**4,366**	**3,943**	**4,511**	**4,238**	**4,652**	**4,012**	**3,877**	**45,700**

*For each year, there is a small percentage of reports not included due to missing reports or reports that were not submitted. However, the numbers presented in this table represent all case numbers taken for dog incidents.

There are a number of limitations associated with the collected data. For example, the number of citations issued to visitors not complying with dog walking regulations is not equal to the number of violations at the park. There are many more violations, as suggested by calls and complaints from the public, but are not recorded because they are not observed by the law enforcement staff or not reported by the public. Also, law enforcement patrols are not conducted daily at all GGNRA sites, partly due to the size of the park and the distance between park sites, but also due to the inability of limited staff to cover so many areas on each shift. Law enforcement is responsible for approximately 80 miles of non-contiguous park sites. There are approximately nine law enforcement staff members and U.S. Park Police patrolling park sites per shift; therefore, law enforcement must strategize which sites to patrol each shift. In addition, many law enforcement staff patrol in pairs when monitoring for pet-related compliance. Low use sites and small sites are not as regularly patrolled due to staffing limitations. Approximately 1 percent of law enforcement time is devoted to dog management–related issues.

NPS changed its reporting software and inputting system in 2012, and data were not collected or categorized in a similar manner as previous years, including dog related incidents, which were not recorded separately, but captured under "Other Offenses." Table 6 includes the number and type of incidents collected by both park rangers and park police from 2012 through 2015. The data presented in table 6 was derived from the 2010 through 2015 U.S. Park Police and U.S. Park Ranger annual enforcement reports. Table 6 also indicates where some data from the annual enforcement reports were missing. As a result of these limitations, dog-related incidents presented in this final plan/EIS are underestimated. Although GGNRA cannot provide an exact number of incidents, these data document the concern with dog-related incidents and substantiate the need to regulate dog walking to protect resources, diverse visitor experiences, and health and safety.

TABLE 6. NUMBER AND TYPED OF INCIDENT REPORTS WITHIN GGNRA, 2012–2015

Type of Incident	Number of Incidents by Year*				Total
	2012	2013	2014	2015	
Assists*	8,247	3,237	2,596	17,913	31,993
Disorderly conduct	243	179	175	348	945
Drugs	465	443	325	517	1,750
Injury	missing data	missing data	103	179	282
Traffic incidents	2,071	1,380	1,207	4,044	8,702
Motor vehicle accidents	missing data	94	92	112	298
Vandalism	166	137	143	205	651
Larceny	454	369	375	683	1,881
Other offenses (includes all dog-related violations and non-dog related incidents)	1,139	1,284	364	875	3,662
Natural Resource violations	201	49	30	68	348
Rescues (includes dogs & other)	missing data	15	40	38	93
Total	12,986	7,187	5,450	24,982	50,605

In an effort to better understand violations that are not recorded by law enforcement, lifeguard statistics, including warnings to visitors, were reviewed for two park swim beaches that have lifeguards, Stinson Beach and Ocean Beach. Lifeguard statistics are typically reported annually into a national database of the United States Lifesaving Association (USLA 2016). GGNRA lifeguards deployed at Stinson Beach and Ocean Beach complete daily logs that are rolled up into these reports annually after the end of the calendar year. As part of those statistics, one item in their annual report identifies the approximate number of warnings issued to visitors due to rule violations (fire, dog, etc.) surf cautions, etc. Lifeguard warnings at Stinson Beach related to dog management issues is reported as typically 60 percent of total warnings for any given year, at Ocean Beach approximately 10 percent of lifeguard warnings issued are related to dog management issues. Data from law enforcement documented 27 dog related incidents between 2012 and 2014, lifeguard statistics reported approximately 3696 incidents during the same time period. Since the lifeguards are present every day, all day. Seasonally, they are able to document violations more consistently. Many violations at Stinson are related to dogs on the GGNRA beach, where dogs are not permitted. At Ocean Beach, where dog related incidents make up a smaller percentage of the lifeguard statistics, lifeguards reported 1350 dog related incidents between 2013 and 2015, law enforcement data reported 75 dog related incidents over the same time period.

In addition to obtaining the annual law enforcement incident databases from 2001 through 2011, paper copies of the dog-related law enforcement incident reports for the years 2008 through 2011 were obtained from GGNRA to conduct a more detailed analysis for each GGNRA site. Each dog-related incident report was reviewed individually to identify violations of applicable portions of 36 CFR that occurred with the incident as well as the action taken, if any. Paper copies of the incident reports for the years 2001 through 2006 were unavailable (due to previous disposal in accordance with NPS Records Disposal guidelines). Paper incident reports for the year 2007 were only available for part of that year and were therefore not used in the analysis. The number of dog-related incidents in the 2008 through 2011 analysis does not match the number of incidents in the analysis of the overall law enforcement data in table 5 (which includes incidents not related to dogs) because incident reports may contain more than one violation. This analysis is based on a review of the incident descriptions in each law enforcement report; there were often

multiple incident violations per incident report. This was not done for the overall law enforcement data analysis because incident reports not related to dogs did not generally include multiple violations and there was insufficient staff time available to review the approximately 40,000 incident reports not related to dogs. The detailed analysis for each GGNRA site for the years 2008 through 2011 is discussed when applicable in this chapter under the "Vegetation, Soils, and Wildlife" section and the "Visitor Use and Experience" section.

Incident reports from 2012 through 2016 were also obtained to update the analysis for each GGNRA site. However, data from 2012 through 2016 cannot be directly compared to previous years' data because the dog-related incidents were collected and categorized differently. The analysis for each GGNRA site for the years 2012 through 2016 is discussed when applicable in this chapter under the "Vegetation, Soils, and Wildlife" section and the "Visitor Use and Experience" section.

VEGETATION, SOILS, AND WILDLIFE

The coastal ecosystem at GGNRA supports a rich assemblage of plant and wildlife species. The park's grasslands, coastal scrub, wetlands, and forests support 387 documented vertebrate species. GGNRA is also home to 80 vegetation alliances (or plant communities), which provide habitat for at least 53 species of mammals, 250 species of birds (including shorebirds, ground-nesting birds, and many others), 20 species of reptiles, and 11 species of amphibians (NPS 2009a, 1). This section describes the vegetation, soils, and wildlife communities at GGNRA potentially affected by dog management activities; therefore, not all communities present at GGNRA will be described in this section. Plant and wildlife species that are federally or state-listed are described in the "Special-status Species" section.

The coastal ecosystem at GGNRA supports a rich assemblage of plant and wildlife species.

Of the general vegetation communities that have been mapped at GGNRA, the ones of interest for analysis of potential impacts resulting from the dog management alternatives in this final plan/EIS are described in detail below and are presented by site in maps 22 through 24. In this section, each vegetation community is described by general location in GGNRA, overall species composition in the community, plant species of interest or management concern, and wildlife species that occur or may occur in the community. Species of interest include plants or wildlife species that are not federally or state-listed but that have status or ranking through either the California Department of Fish and Game or the California Native Plant Society (CNPS). Many bird species that occur at GGNRA are not federally or state-listed, but are still protected under the *Migratory Bird Treaty Act* and are also considered species of interest or watch list species. All the bird species at GGNRA discussed in this section with the exception of starlings, pigeons, crows, and game birds are protected under the *Migratory Bird Treaty Act*. Additionally, some species with the "fully protected" status also exist at GGNRA; a fully protected species means that the state has either restricted issuing take permits for the species or the state will only issue take permits for research or enhancement actions (DFG 2010, 1).

The following vegetation communities in GGNRA and associated soils and wildlife are described in this section:

- Coastal communities
- Coastal scrub and chaparral
- Grasslands
- Wetlands and open water (including surface waters, tidelands, and other water features)
- Native hardwood forest

- Riparian forests and streams
- Douglas-fir and coast redwood
- Monterey cypress
- Invasive plant species.

Because soils have been dismissed as a stand-alone section in this document, discussions of soil types and impacts resulting from soil compaction and subsequent changes to soils are included in the vegetation and wildlife section of chapters 3 and 4. Overall, the soils in GGNRA belong to the following complexes: Cronkhite-Barnabe complex, Centissima-Barnabe complex, Barnabe-Candlestick complex, Alambique-McGarvey complex, Tamalpais-Barnabe variant, and Saurin-Bonnydoon complex (NRCS 2004a, 9; 2004b, 9). All these soils are susceptible to water erosion when they are disturbed or exposed (e.g., when vegetation is trampled or removed). Some soils in the park are considered Urban Lands, which are lands and soils whose characteristic properties have been modified as a result of development (NRCS 2005, 9). When applicable, a discussion of soils is included in the vegetation discussion in the paragraphs that follow.

At GGNRA, vegetation and wildlife management is primarily focused on research, monitoring, and meeting desired conditions. Management activities include reestablishing and/or establishing native plant species, controlling weeds and trampling, and removing and/or controlling invasive species. The goal of vegetation and wildlife management at GGNRA is to improve monitoring, restore or enhance populations and/or remove threats, and reduce conflicts between park visitors and sensitive species. Restoration efforts include decompacting soils, removing exotic species, and planting. Park stewardship programs also support efforts to protect and improve resources at the park, such as renovating and expanding GGNRA trails and providing assistance in restoration efforts (NPS 2009a, 1).

In addition to stewardship programs, GGNRA participates in monitoring through the San Francisco Bay Area Network Inventory and Monitoring Program. This Inventory and Monitoring Program monitors resources at GGNRA identified as vital signs and includes the following: salmonid fish, landbirds, harbor seals, listed species (western snowy plover and northern spotted owl), plant communities, invasive plants, specific habitats (riparian, wetland, and rocky intertidal), weather and climate, landscape dynamics, stream flow, and water quality. GGNRA conducts monitoring in all three counties (San Francisco, Marin, and San Mateo County) and monitors resources outside of the Inventory and Monitoring Program, including joint monitoring efforts between GGNRA and Golden Gate National Parks Conservancy for the following: listed species (mission blue butterfly, San Bruno elfin butterfly, California red-legged frog, San Francisco garter snake, rare plants), invasive plants, and water quality. In addition, GGNRA monitors bats, bank swallows, and the endangered tidewater goby.

The park collects data regarding disturbance to wildlife and habitats at GGNRA sites. For example, these data are collected through western snowy plover and bank swallow monitoring programs. These data are also collected as incident reports when visitors violate park regulations as previously discussed at the beginning of this chapter. For example, 36 CFR 2.1 covers the preservation of natural resources. Vegetation damage is described in 36 CFR 2.1 (a) (1) (ii)). The following is applicable to vegetation and soils and is prohibited: possessing, destroying, injuring, defacing, removing, digging, or disturbing from its natural state. In addition, 36 CFR 2.2 covers the protection of wildlife. Wildlife disturbance is described in 36 CFR 2.2 (a) (2) and the following is prohibited: feeding, touching, teasing, frightening, or intentional disturbing of wildlife nesting, breeding, or other activities. 36 CFR 7.97(d) describes the seasonal dog walking leash restrictions for the western snowy plover in the Snowy Plover Protection Area (SPPA) at Ocean Beach and in the Wildlife Protection Area (WPA) at Crissy Field, discussed in more detail in the Special-Status section.

From the years 2008 through 2016, law enforcement recorded incidents directly related to natural resources, including damages to vegetation and resources, disturbing wildlife, and possessing dogs in areas closed due to sensitive natural resources (included in tables 7a and 7b). Because Rancho Corral de Tierra was just transferred to NPS in December 2011, law enforcement data and statistics are not available for table 7a; however table 7b includes data for these sites for years 2012 to 2016. From 2008 through 2016, a total of 1,903 dog-related incidents associated with natural resources occurred at GGNRA. It is important to note that other visitor activities, such as hiking, running, biking, and equestrian riding also impact natural resources, but this document focuses only on the impact of walking dogs at GGNRA. The law enforcement incident reports from 2008 through 2016 showed that Ocean Beach has the most incidents, with a total of 932 recorded dog-related incidents associated with natural resources. The majority of the incidents reported were for having a dog off leash within the Ocean Beach SPPA (802 recorded incidents, tables 7a and 7b) during the period when dogs must be leashed (July 1 through May 15). From 2008 through 2016, Crissy Field had the second most incidents, with a total of 409 recorded dog-related incidents associated with natural resources. The most common incident at Crissy Field was for having off-leash pets within the WPA (312 reported incidents, tables 7a and 7b) during the period when dogs must be leashed (July 1 through May 15).

TABLE 7A. DOG-RELATED INCIDENTS FOR VEGETATION, SOILS, AND WILDLIFE, 2008–2011

Park Site	Recorded Incidents, 2008–2011			
	Dogs Damaging Vegetation	Dogs in Closed Areas / Leash Violations of the WPA or SPPA*	Dogs Disturbing Wildlife	Total
Stinson Beach	0	76	0	**76**
Alta Trail / Orchard Fire Road / Pacheco Fire Road	0	8	0	**8**
Oakwood Valley	0	1	0	**1**
Muir Beach	0	6	1	**7**
Rodeo Beach	0	7	2	**9**
Marin Headland Trails	0	222	1	**223**
Fort Baker	0	4	0	**4**
Upper and Lower Fort Mason	0	5	0	**5**
Crissy Field	0	73 / 283*	2	**358**
Fort Point	0	3	0	**3**
Baker Beach	0	20	0	**20**
Sutro Heights	2	2	0	**4**
Ocean Beach	0	77 / 729*	9	**815**
Fort Funston	1	1	0	**2**
Mori Point	0	1	0	**1**
Sweeney Ridge / Cattle Hill	0	1	0	**1**
Total	**3**	**1,519**	**15**	**1,537**

*Includes incidents reported for having an unleashed dog within the Ocean Beach SPPA or the Crissy Field WPA during the period (July 1–May 15) when dogs must be leashed.

TABLE 7B. DOG-RELATED INCIDENTS FOR VEGETATION, SOILS, AND WILDLIFE, 2012–2016

Park Site	Recorded Incidents, 2012–2016			
	Resource Violation	Dog Walker in Closed Area*	Dog/Wildlife Interaction	Total
Stinson Beach	11	5	0	**16**
Alta Trail / Orchard Fire Road / Pacheco Fire Road	1	12	0	**13**
Oakwood Valley	1	3	0	**4**
Muir Beach	1	0	0	**1**
Rodeo Beach	0	1	0	**1**
Marin Headland Trails	36	56	1	**93**
Fort Baker	3	1	1	**5**
Upper and Lower Fort Mason	11	5	0	**16**
Crissy Field	12	8	3	**23**
Fort Point	11	5	0	**16**
Baker Beach	2	10	2	**14**
Lands End	0	4	0	**4**
Sutro Heights	0	2	0	**2**
Ocean Beach	33	10	2	**45**
Fort Funston	0	33	0	**33**
Mori Point	0	3	1	**4**
Milagra Ridge	0	3	0	**3**
Sweeney Ridge / Cattle Hill	1	3	0	**4**
Rancho Corral de Tierra	1	0	0	**1**
Total	**124**	**164**	**10**	**298**

**Violations at Crissy Field and Ocean Beach do not separate out the incidents that occurred within the WPA and SPPA, as done in the previous data set.

Excerpts of quotes from the law enforcement incident reports included below demonstrate the natural resources issues associated with dogs at GGNRA sites.

Closed Areas:

- "We observed the canine swim in Rodeo Lagoon (which is prohibited). We observed the same canine bark at and repeatedly chase numerous water-foul [sic] that were in the lagoon." (Rodeo Beach, May 19, 2010, Incident Report # 10-005086)
- "While patrolling with a NPS Ranger in a marked patrol vehicle along Mason, I observed an off-leash dog running in the posted and fenced closed wildlife area adjacent to Crissy Field. The area is posted closed with no entry allowed." (Crissy Field, May 23, 2009, Incident Report # 09-005249)

- "I observed the two dogs run into the Muir Beach Lagoon, an area that is closed to pets." (Muir Beach, November 9, 2010, Incident Report # 10-012822)

Damaging Vegetation:

- A NPS "Ranger and I observed two dogs running off leash on the protected plant area of Battery Chamberlin." (Baker Beach, January 12, 2009, Incident Report # 09-432)
- "I observed two off-leash dogs running around the Fort Funston Ranger Office. I observed them running around and digging up native plants near the native plant nursery." (Fort Funston, September 29, 2010, Incident Report # 10-011098)
- "They were accompanied by an unrestrained Australian Shepherd-like dog which was walking over the just-revegetated slope west of the stairs, cordoned off to allow growth." (Mori Point, March 17, 2009, Incident Report # 09-002701)
- "We noticed a male in the area with a dog conducting resource damage by digging." (Sutro Heights, March 26, 2009, Incident Report # 09-003043)

Chasing Wildlife:

- "I saw a man… wearing a backpack and accompanied by an unrestrained dog, walk toward a small herd of about five deer. His direction of travel was purposeful and directly toward the deer. The dog appeared excited, but sat repeatedly on command, until about one hundred feet from the deer. I exited my vehicle and approached the man, wanting to discuss wildlife harassment. Shortly before I began my contact, the dog rushed toward the deer, chasing them over a small rise and up the hillside. The man called his dog and the dog finally returned from a distance of about two hundred feet." (Marin Headlands, November 25, 2009, Incident Report # 09-013103)
- "While on foot patrol of the Wildlife Protection Area at Ocean Beach near Judah, I observed a male-adult walking with his two unleashed pets though the signed and designated Wildlife Protection area. The dogs ran up to approximately forty yards away from the owner chasing nearby shorebirds." (Ocean Beach Wildlife Protection Area, January 10, 2010, Incident Report # 10-368)
- "I observed two female-adults, one of which was hitting a tennis ball with a racquet for a black medium large dog to fetch as they walked along the beach. I observed her hit the ball thirty to forty yards away as the dog would chase shore birds, fetch the ball, and return it." (Ocean Beach Wildlife Protection Area, January 10, 2010, Incident Report # 10-374)
- "I observed a male-adult throwing a soft Frisbee for a small speckled cattle dog mix to fetch as he walked along the beach. I observed him throw the Frisbee thirty plus yards away as the dog would chase shore birds, fetch the Frisbee, and return it. I saw him continue to allow the dog to run throughout the area as he walked southbound from Judah to my location at Noriega." (Ocean Beach Wildlife Protection Area, January 11, 2010, Incident Report # 10-419)
- "I observed an unrestrained brown Labrador Retriever type dog playing catch with its owner… on the Meadow at Fort Baker, within the Golden Gate National Recreation Area. I also observed two deer grazing within the same meadow. When the dog saw the deer it gave chase; chasing the deer west, into the trees." (Fort Baker, August 23, 2010, Incident Report # 10-009283)
- "I observed a medium sized, white/black colored, off-leash dog running unrestrained southbound on Ocean Beach near Pacheco St. This dog was chasing shore birds at the water line causing the birds to take flight." (Ocean Beach, August 25, 2010, Incident Report # 10-009355)

- "I observed a small, black off-leash dog running unrestrained after shorebirds northbound on Ocean Beach near Noriega St. I also observed a medium sized, white, off-leash dog running unrestrained northbound on Ocean Beach near Noriega St… At one point, I observed the black dog running approx. 50 feet ahead of [the owner] while chasing shorebirds and causing them to go into flight. During this contact, I observed this dog twice run uncontrolled after shorebirds." (Ocean Beach, January 24, 2009, Incident Report # 09-000853)

Killing Wildlife:

- "NPS Dispatch took a phone report of a dog attack in Rodeo Lagoon. The dog, described as a large black Labrador, chased a male deer into Rodeo Lagoon, where the deer subsequently drowned while trying to defend itself from the unleashed dog." (Rodeo Beach, June 13, 2010, Incident Report # 10-006226)

COASTAL COMMUNITIES

The coastal communities at GGNRA include habitats such as coastal dunes, beaches, adjacent open water, and rocky intertidal areas, of which only the coastal dune habitat supports plant communities that are likely to be affected by dogs. In the study area at GGNRA, coastal dune habitat is found at Muir Beach, Rodeo Beach, Crissy Field, Baker Beach, Ocean Beach, and Fort Funston. There is also beach and coastal dune habitat at Stinson Beach, but this area is not affected by dog management alternatives and is not discussed further in this final plan/EIS. The following areas in the dog management planning areas at GGNRA have beach habitat: Muir Beach, Rodeo Beach, Crissy Field, Baker Beach, Ocean Beach, Fort Funston, and Mori Point; dogs are currently allowed access to these beaches or portions of these beaches. As applicable, these beach areas are discussed in more detail in the following paragraphs. Many of the coastal sites in GGNRA have rocky intertidal areas and rocky cliffs, including Muir Beach, Rodeo Beach, Fort Baker, Fort Mason, Lands End, Fort Funston, Mori Point, but rocky intertidal areas are not the dominant habitat type at these sites or this habitat is generally not accessible to visitors and are not discussed further in this final plan/EIS.

Coastal dune habitat develops wherever there is accumulated sand resulting from wind and wave action above the high tide line. Dune systems, which rely on natural disturbance regimes for their ecological function, are very susceptible to artificial disturbance, which can disrupt the natural processes. Dune and beach systems are predominantly comprised of sand. At Baker Beach, Lands End, Sutro Heights Park, Ocean Beach, and Fort Funston, the soil complex known as Sirdak Sands exists (NRCS 2004b, 12). Sirdak Sands are deposited in dunes, can reach a depth of 120 feet, are somewhat excessively drained and have a low available water capacity (NRCS 2004b, 12). Crissy Field and Stinson Beach also have dune systems. Stinson Beach is supplied with sand material from the sand dunes in the area (SBCWD 1998, 1). Other soils at the park are characterized as "Beach" in coastal areas at the following sites: Baker Beach, Ocean Beach, Fort Funston, Mori Point, Rodeo Beach, and Muir Beach (NRCS 2004b, 12). Muir Beach is a Holocene beach composed of sand deposits at the mouth of Redwood Creek (NPS 2007b, 3–11). The beach is supplied with sand that comes from both Redwood Creek and the long-shore transport of sand along the coast. The remnant undeveloped coastal corridor supports exceptional native biodiversity and provides refuge for one of the largest concentrations of rare, threatened, and endangered species in the national park system (NPS 2011b, Volume I:17). The active foredunes and inner, stabilized dunes support a simple, yet unique, plant community. Dunes create unique habitats that support some of the park's rare and endangered plant species (Elder n.d., 11). The overall diversity of plant species that inhabit coastal dunes is low, and plants are usually prostrate or low growing. Naturally stabilized dunes at GGNRA are inhabited by low-growing perennial shrub species also found in the coastal scrub habitat. Active foredunes are usually colonized by pioneering species such as coastal buckwheat (*Eriogonum latifolium*), sand verbena (*Abronia maritima*), and beach bur (*Ambrosia chamissonis*) (Powell 1978, 41-42). The

beach at Rodeo Beach supports coastal vegetation consisting mainly of native low-growing dune species. These dune perennials are easily disturbed by trampling, digging, and other human-related activities, creating opportunities for the establishment of non-native and/or invasive plant species, such as ice plant (*Carpobrotus edulis*).

The Lands End Coastal Trail at Lands End is currently being improved and the surrounding forest is being revitalized through park stewardship programs. A portion of the beach habitat at Ocean Beach is designated as the Ocean Beach SPPA and a portion of the beach habitat at Crissy Field is designated as the Crissy Field WPA. Both areas are protected to provide overwintering habitat for the federally threatened western snowy plover and are described in more detail in the "Special-status Species" section of this chapter. Ocean Beach today represents a highly constructed and manipulated beach environment influenced by a combination of natural processes and human influences on those natural processes (NPS 1999, 42). While vegetation is minimal on the portions of Ocean Beach that experience periodic wave overwash, the beach is backed by an extensive dune complex dominated by non-native European beach grass (*Ammophila arenaria*), which was historically planted to stabilize the sand and prevent it from blowing onto the highway and further inland.

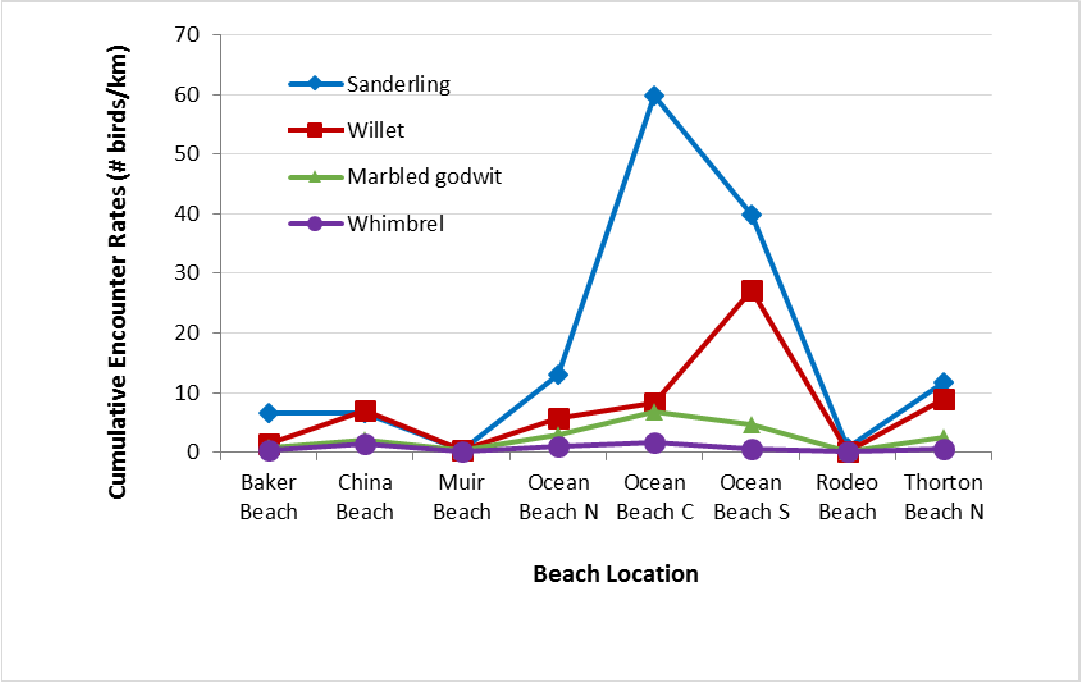
The native dune community at Crissy Field and the dune scrub community at Baker Beach provide important and unique habitat. The Baker Beach dune scrub is one of the few remaining intact stands of this vegetation type in San Francisco. Dune scrub is found on the sand terrace slopes above Baker Beach and in the Lobos Creek Dunes, and the listed San Francisco lessingia is found in association with this community. The San Francisco lessingia, listed as federally and state-endangered, is described in detail in the "Special-status Species" section of this chapter. The dunes around Crissy Field, Baker Beach, and Lobos Creek Valley have been seeded with San Francisco dune gilia (*Gilia capitata* ssp. *chamissonis*) and San Francisco Bay spineflower, both species of interest at GGNRA because of their inclusion on CNPS List 1B (CNPS 2010, 1). Both Fort Funston and Baker Beach have been designated as San Francisco lessingia recovery and enhancement sites (USFWS 2003, 52). Other plant species of interest or management concern that occur at individual sites in the coastal dune habitat at GGNRA are described below, as applicable. One CNPS-listed plant species, the pink sand-verbena (*Abronia umbellata* ssp. *breviflora*), is found in the coastal dune habitat at Stinson Beach and is being reintroduced at Baker Beach, below completed remediation sites. Trampling of the camphor tansy or dune tansy (*Tanacetum camphoratum*) species is being reduced and controlled through the restoration work of park stewardship programs. Patches of non-native ice plant at GGNRA have been removed by park stewardship programs as well.

The intertidal zone in the upper sandy beach (swash zone) supports amphipods, polychaetes (marine worms), and flies that also provide food for shorebirds (Fong et al. 2000), including the western snowy plover. The western snowy plover uses the active foredune and beach areas at GGNRA and forages along the intertidal areas. This species is discussed in more detail in the "Special-status Species" section of this chapter. A variety of other shorebird species migrate or overwinter in coastal areas of GGNRA and are often found in the same habitats as those used by the western snowy plover. All the bird species discussed in this habitat are protected under the *Migratory Bird Treaty Act*. Species abundance and diversity of shorebirds is monitored by the park and the Gulf of the Farallones National Marine Sanctuary Beach Watch program. The highest density of shorebirds on monitored GGNRA beaches generally occurs during shorebird northbound (April) and southbound (September) migration (Beach Watch 2006, 1). Beach Watch bird count data were analyzed for the following beaches included in this final plan/EIS: Baker Beach, Muir Beach, Ocean Beach (North, South, and Central), Rodeo Beach, and Fort Funston (or Thornton Beach North). Collected data for beaches have indicated that willet (*Catoptrophorus semipalmatus*), marbled godwit (*Limosa fedoa*), sanderling (*Calidris alba*), and whimbrel (*Numenius phaeopus*) are the most common species of shorebirds using beaches in GGNRA and are often found to some extent year-round (Beach Watch 2006, 1). Numerous other species of waterbirds occur in the park

in open water marine and rocky intertidal habitats, cliffs, and beach areas. These include a mix of migrant, wintering, and breeding species, such as loons, grebes, ducks, geese, gulls, terns, wading birds (herons and egrets), the long-billed curlew, and the California brown pelican (delisted from the federal and state *Endangered Species Act* (ESA) in 2009). The sanderling, long-billed curlew, and the marbled godwit, commonly found at GGNRA, are considered watch list species by the American Bird Conservancy and the National Audubon Society; these species are not yet listed but are in need of conservation (American Bird Conservancy and National Audubon Society 2007, 2). Muir Beach and Rodeo Beach sites had documented low shorebird abundance and diversity compared to other GGNRA coastal beaches that had high shorebird abundance and diversity such as Ocean Beach (Central and South) and Fort Funston (or Thornton Beach North) (Beach Watch 2006, 11).

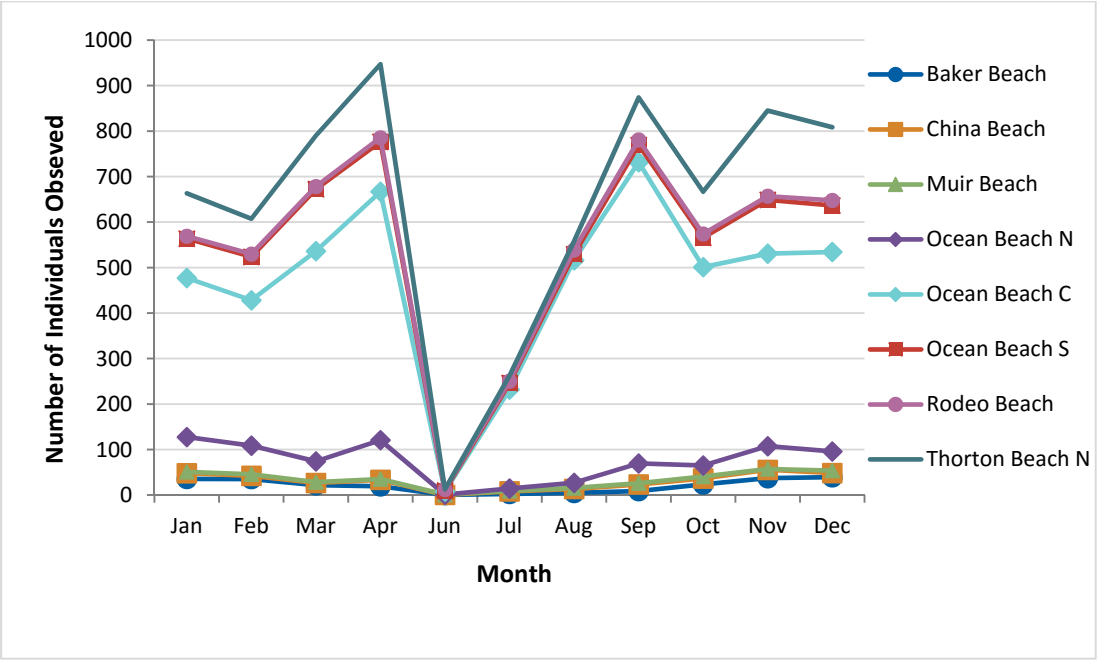
Common bird species that use the coastal dune and tidal zone (areas subject to tidal actions) include western gull (*Larus occidentalis*), Heermann's gull (*Larus heermanni*), ring-billed gull (*Larus delawarensis*), Caspian tern (*Hydroprogne caspia*), semipalmated plover (*Charadrius semipalmatus*), western sandpiper (*Calidris mauri*), dunlin (*C. alpina*), and least sandpiper (*C. minutilla*). Figures 1 and 2 present numbers of commonly observed shorebird species by GGNRA site and month from 1993 through 2016. The Caspian tern and the elegant tern (*Sterna elegans*, a watch list species) both roost on the park's beaches during the summer months. Seabirds and diving ducks also use nearshore habitat along the outer coast of GGNRA and inside San Francisco Bay for foraging and resting. Common seabirds include several species of loons, grebes, and cormorants. In addition to the bird species listed above, common mammal species also use the coastal areas in GGNRA, including skunks (*Mephitis mephitis*) and raccoons (*Procyon lotor*). Deer mice (*Peromyscus maniculatus*) and a western harvest mouse (*Reithrodontomys megalotis*) were captured in the dune area at Muir Beach during small mammal surveys (Takekawa et al. 2003, 7). Roof rat, a non-native mammal species were also captured in dune habitat during the surveys (Takekawa et al. 2003, 7) and feral house cats (*Felis silvestris catus*) have also been observed in coastal areas at GGNRA.

Fort Funston is the largest of several significant remnants of the San Francisco dune complex (Shulzitski and Russell 2004, 4). The NPS implemented a restoration project in 1991 to protect habitat for the bank swallow, restore native dune vegetation, and reduce human-induced impacts to the coastal bluffs and dunes (Shulzitski and Russell 2004, 5). The 12-acre Fort Funston Habitat Protection Area is closed per the GGNRA Compendium (NPS 2008b, 9). A nesting colony of the state-threatened bank swallow has occupied burrows in coastal bluff habitat at Fort Funston, which has a seasonal advisory during nesting season and is discussed in more detail in the "Special-status Species" section of this chapter.



Source: Beach Watch 2016

FIGURE 1. COMMONLY OBSERVED SHOREBIRD SPECIES AT GGNRA BEACHES, 1993–2016



Source: Beach Watch 2016

FIGURE 2. AVERAGE SHOREBIRD DENSITY BY MONTH AND BEACH AT GGNRA, 1993–2016

Nearshore areas offshore of the beaches in GGNRA are likely used by fish species such as English sole (*Pleuronectes vetulus*), speckled sand dab (*Citharichthys stigmaeus*), white croaker (*Genyonemus*

lineatus), shiner surfperch (*Cymatogaster aggregate*), barred surfperch (*Amphistichus argenteus*), and striped bass (*Roccus saxatilis*) (McCormick 1992). Marine mammals use the waters and shorelines of GGNRA, including rocky, intertidal habitat that provides haul-out sites. Haul-out sites have been documented at Bonita Cove, Seal Rocks, and Lands End. Pacific harbor seals (*Phoca vitulina*) are known to haul out primarily at Bonita Cove but may be found at any site with appropriate conditions, (URS Corporation 2010, Figure 4). Point Bonita is located on the shoreline at the southernmost tip of the Marin Headlands. Up to 250 harbor seals haul out in Point Bonita Cove at Marin Headlands, and significant harbor seal pupping areas are found in Bolinas Lagoon and Tomales Bay in or directly adjacent to the park (NPS 1999, 13). California sea lions (*Zalophus californianus*) are found in association with Pacific harbor seals at Seal Rocks and Lands End but are sporadic in their use of the sites. All marine mammals are protected under the *Marine Mammal Protection Act*.

Lands End
Credit: NPS

Marine mammals that have been found stranded, sick, or injured on beaches in GGNRA are recorded by the Marine Mammal Center. A list of recent live animal reports for stranded animals in GGNRA from 2000 through 2011 was compiled from the Marine Mammal Center data and is presented in table 8 (MMC 2012a, 1). The Marine Mammal Center data indicate that the following marine mammals have been found stranded in GGNRA: whales (not identified to species level), the bottlenose dolphin (*Tursiops truncatus*), the northern right-whale dolphin (*Lissodelphis borealis*), the harbor porpoise (*Phocoena phocoena*), Pacific harbor seal, the California state fully protected northern elephant seal (*Mirounga angustirostris*), the federally listed threatened Guadalupe fur seal (*Arctocephalus townsendi*), the northern fur seal (*Callorhinus ursinus*), the California sea lion, the federally listed threatened southern sea otter (*Enhydra lutris nereis*), and the river otter (*Lontra canadensis*) (MMC 2012a, 1). Sites at GGNRA that experience marine mammal strandings based on Marine Mammal Center data are noted in table 8 (MMC 2012a, 1).

It has been noted that as the northern elephant seal population rapidly increases, individuals of this species are encountered more frequently on sandy beaches throughout the region (NPS 1999, 13) during strandings and hauling out. Three immature elephant seals hauled out on the beach in the Crissy Field WPA for a few days each on three separate occasions in December 2009 and January 2010, necessitating temporary closure of portions of the beach: two of these seals were molting, and one, it was later learned, had a brain condition. Stranded marine mammals and marine mammals that have hauled-out on GGNRA lands often attract the attention of dogs and people. The Marine Mammal Center data indicate that marine mammals are often harassed by dogs. Dogs have been observed surrounding marine mammals, chasing them back to the water, and in one case, attacking a California sea lion (MMC 2012a, 1).

Harbor porpoises and whale species, such as California gray whales (*Eschrichtius robustus*), use offshore waters, and young whales occasionally wander into San Francisco Bay. Southern sea otters are infrequently seen offshore, with numbers increasing as the population spreads north (NPS 1999, 13). Further discussions of listed marine mammals are included in the “Special-status Species” section of this chapter.

TABLE 8. THE MARINE MAMMAL CENTER TOTAL NUMBER OF INDIVIDUAL LIVE ANIMAL REPORTS FOR STRANDING IN GGNRA, 2000–2011

GGNRA Location	Whales, Dolphins, Porpoises	California Sea Lion	Northern Elephant Seal	Northern Fur Seal	Guadalupe Fur Seal	Pacific Harbor Seal	Otters (River or Sea)	Total*	Average per year
Stinson Beach	7	66	43	2	2	20	3	**143**	**11.9**
Muir Beach	3	31	23	1	0	1	1	**60**	**5.0**
Rodeo Beach	4	40	16	0	1	7	1	**69**	**5.75**
Tennessee Valley	2	16	9	0	0	0	0	**27**	**2.25**
Fort Baker	3	25	4	0	0	3	0	**35**	**2.9**
Fort Mason	1	2	0	0	0	0	0	**3**	**0.25**
Crissy Field	12	55	13	0	0	4	0	**84**	**7.0**
Fort Point	2	15	1	0	0	0	0	**18**	**1.5**
Baker Beach	8	24	8	0	0	4	0	**44**	**3.67**
Lands End	1	4	1	0	0	0	0	**6**	**0.50**
Sutro Baths	1	8	0	0	0	0	0	**9**	**0.75**
Ocean Beach	22	174	23	0	2	15	3	**239**	**19.9**
Fort Funston	6	53	13	0	1	4	0	**77**	**6.42**
Total	**72**	**513**	**154**	**3**	**6**	**58**	**8**	**814**	**67.8**

Source: MMC 2012a.

*Does not include unidentified species, carcasses, or animal reports from outside the project area.

COASTAL SCRUB AND CHAPARRAL

Scrub communities, such as bluff scrub, coastal scrub, and serpentine scrub, and chaparral communities are found throughout GGNRA. Bluff scrub occurs rarely in GGNRA on the steep ocean-side and along the bay-exposed bluffs. Coastal scrub is similar to bluff scrub, but is found at a slightly higher elevation on slopes and inland areas and is dominated by low shrubs along the California coast. The coastal scrub community creates a mosaic with the grassland community and is found throughout the park from near mean sea level (msl) up to approximately 2,500 feet above msl. Coastal scrub plants must contend with harsh conditions such as steep rocky soils and shearing winds. Interspersed among the shrubs are areas of forbs and grasses. Bluff scrub is dominated by low shrubs and herbaceous species. Serpentine scrub habitat occurs on serpentine outcrops and shallow serpentine soils and as a result is rare and localized in GGNRA. Because serpentinite is altered mantle rock, its chemistry is unlike most other continental rocks. Serpentinite is low in potassium and calcium, which are important plant nutrients. It also contains high levels of magnesium, nickel, and chromium that are potentially toxic to plants. Therefore, plants living on serpentine soils are specially adapted to these unusual chemical conditions (NPS 2011b, Volume II:28). Some species that are presumably unable to compete with other plants also occupy only these harsh environments, where more common species do not grow (USFWS 1998a, I-10). These communities are often high in diversity and contain high numbers of rare, threatened, and endangered plant species (Elder n.d). At least 28 species of plants and animals occur either exclusively or primarily on serpentine soils in the Bay Area (USFWS 1998a, I-14). Of these, half are federally listed as threatened or endangered and the rest are species of concern (USFWS 1998a, I-13) (see “Special-status Species” for more detail on

threatened or endangered plant species). Serpentine soils support grassland and shrubland vegetation communities. Listed plant species that occur on serpentine soils and are associated with scrub and chaparral communities, include the following CNPS-listed plant species: Tamalpais manzanita (*Arctostaphylos hookeri* ssp. *montana*), Franciscan manzanita, Tamalpais jewel-flower (*Streptanthus glandulosus*), coast rock-cress (*Arabis blepharophylla*), Franciscan thistle (*Cirsium andrewsii*), Marin checker lily (*Fritillaria lanceolata* var. *tristulis*), fragrant fritillary (*Fritillaria liliacea*), San Francisco gumplant (*Grindelia hirsutula*), and Crystal Springs lessingia (*Lessingia arachnoidea*).

Chaparral is a specific type of scrubland that also occurs along the California coast. In GGNRA the presence of chaparral is rare and localized. Most of the shrubs that make up chaparral are tough-leaved evergreens, and many species have thorns or prickly leaves to guard against grazing. Chaparral occurs in dry soils, which often occur on the south-facing slopes of coastal mountains adjacent to coastal scrub or woodlands. During the dry season, chaparral is extremely vulnerable to fire; thus, plant species that inhabit this environment are adapted to regular fires. Chaparral is dominated by many species of manzanita (*Arctostaphylos* spp.), buckbrush or California lilac (*Ceanothus* spp.), poison-oak, buckthorn (*Rhamnus* spp.), chamise (*Adenostoma* spp.), and other shrubs, including yerba santa (*Eriodictyon* sp.) and black sage (*Salvia mellifera*).

Coastal scrub and chaparral communities are found in the following park sites included in this final plan/EIS: Homestead Valley, Oakwood Valley, Alta Trail, Muir Beach, Marin Headlands, Fort Baker, Baker Beach (bluff scrub), Fort Point (bluff scrub and coastal scrub), Lands End, Fort Miley, Mori Point, Milagra Ridge, Cattle Hill/Sweeney Ridge, and Rancho Corral de Tierra. Serpentine scrub chaparral provides habitat for several of the park's endangered, threatened, or rare plant species, including Presidio manzanita, Franciscan manzanita, Marin dwarf-flax, and Presidio clarkia, which all inhabit low-growing serpentine coastal scrub and rock outcrops (see "Special-status Species" section for more detail on threatened or endangered plant species). Serpentine outcroppings with serpentine-dependent plant species exist adjacent to coastal and bluff scrub communities, which lie along bluffs east and north of Baker Beach (USFWS 2003, 6) and are also located behind the fort at Fort Point (May & Assoc. 2005, 9). Serpentine coastal scrub is also found at the Marin Headlands. Serpentine soils can be found at Baker Beach, Muir Beach, Lands End, and Crissy Field. The serpentine soils at Muir Beach lie outside the study area for this final plan/EIS. At Crissy Field, serpentine soils are found only in the study area adjacent to Marine Drive. The serpentine soils at Baker Beach are located on the coastal bluffs between Baker Beach and the Golden Gate Bridge (USFWS 2003, 17). The serpentine soils at Lands End are located at the western end of the site, near Fort Miley. Chaparral also occurs in the higher elevations of Rancho Corral de Tierra. The endemic Montara manzanita (*Artostaphylos montarensis*), and the brittle-leaf manzanita (*Artpstaphylos tomentosa* spp. *crustacea*) are found in the maritime chaparral at Rancho Corral de Tierra (POST 2001, 20). Coastal scrub and chaparral communities also provide habitat for other CNPS-listed plant species, including Kellogg's horkelia (*Horkelia cuneata* var. *sericea*), Choris's popcornflower (*Plagiobothrys chorisianus* var. *chorisianus*), Santa Cruz microseris (silverpuffs) (*Stebbinsoseris decipiens*), San Mateo tree lupine (*Lupinus arboreus* var. *eximius*), and San Francisco campion (*Silene verecunda* ssp. *Verecunda*).

Coastal scrub is dominated by low shrubs and herbaceous species, such as California blackberry (*Rubus ursinus*), poison-oak (*Toxicodendron diversilobum*), and toyon (*Heteromeles arbutifolia*). The coastal scrub community is dominated by coyote brush (*Baccharis pilularis*), California sagebrush (*Artemisia californica*), bush lupine (*Lupinus arboreus*), and poison-oak, with variations in dominant species based on moisture levels, soil types and slopes, and past land use history (NPS 2005b, 192). Other plant species that inhabit the coastal scrub include sticky monkey flower (*Mimulus aurantiacus*), ceanothus (*Ceanothus* spp.), and coffee berry (*Rhamnus californica*), as well as various forbs and grasses that grow interspersed between the shrubs described above. Vines such as hillside morning glory (*Calystegia* spp.), wild cucumber (*Marah macrocarpus*), and giant vetch (*Vicia gigantea*) trail over the shrubs. Plant species such

as blackberry, osoberry (*Oemleria cerasiformis*), and twinberry (*Lonicera involucrata*) provide food sources for wildlife. The coastal scrub community also contains large numbers of non-native species, and at times is dominated by non-native shrubs such as French broom (*Genista monspessulana*) and thoroughwort (*Ageratina adenophora*). The serpentine scrub habitat, found on serpentine outcrops and shallow serpentine soils, is dominated by ceanothus, toyon, osoberry, and blackberry.

Invertebrates that inhabit the coastal scrub habitat include various species of butterflies: skippers, swallowtails, hairstreaks, blues, ladies, admirals, and crescents. A wide variety of small mammals use the coastal scrub and chaparral habitats, including pocket gophers (*Thomomys* spp.), deer mice, brush rabbits, raccoons, spotted and striped skunks, and black-tailed deer (*Odocoileus hemionus*) (Semenoff-Irving and Howell 2005, 9, 10). Predators such as gray and red foxes (*Urocyon cinereoargenteus*, *Vulpes vulpes*), bobcats (*Felis rufus*), and coyotes (*Canis latrans*) hunt small mammals in the vicinity; mountain lions (*Felis concolor*) and feral cats are also possible (Semenoff-Irving and Howell 2005, 9-10). Both red foxes and feral cats are non-native mammal species. Coyotes are present in coastal scrub at the San Francisco sites, including a known den at Milagra Ridge, a potential den at Mori Point, and a possible recent den site at Fort Miley. Other mammals include the Mexican free-tailed bat (*Tadarida brasiliensis*), which forages over the coastal scrub habitat. Coastal scrub provides habitat for reptiles that burrow or use underground den sites, such as western fence lizards (*Sceloporus occidentalis*), red-sided garter snakes (*Thamnophis sirtalis*), and alligator lizards (*Elgaria* spp.).

Many bird species also use the coastal scrub and chaparral habitats. All the bird species discussed in this habitat are protected under the *Migratory Bird Treaty Act* (with the exception of starlings, pigeons, crows, and game birds). From bird point count censuses in 1999 and 2000 (PRBO 2002, 1), the most abundant species in the coastal scrub habitat were the white-crowned sparrow (*Zonotrichia leucophrys*) and spotted towhee (*Pipilo maculatus*). Several other resident bird species forage, roost, nest, and/or breed in scrub habitat, including the house wren (*Troglodytes aedon*), western scrub jay (*Aphelocoma californica*), Steller's jay (*Cyanocitta stelleri*), California towhee (*Pipilo crissalis*), California thrasher (*Toxostoma redivivum*), northern flicker (*Colaptes auratus*), mourning dove (*Zenaida macroura*), Wilson's warbler (*Wilsonia pusilla*), and acorn woodpecker (*Melanerpes formicivorus*). Various sparrows, including the song sparrow (*Melospiza melodia*), various thrushes, the wrentit (*Chamaea fasciata*), and other small ground- or shrub-nesting birds also use this community. California quail are low-/ground-nesting birds that use this habitat and, locally, are extremely rare in San Francisco, although they do occur at the majority of the GGNRA sites and the Presidio provides an important refuge for this species because it is a small, non-contiguous parcel where quail numbers had historically declined. The Presidio currently supports a breeding population of California quail, which is mostly found in coastal scrub areas, in forests, lawns, and areas of ornamentals. Other low- and ground-nesting birds besides California quail that occur in this habitat at GGNRA and are considered in the Point Reyes Bird Observatory Conservation Science in the Landbird Habitat Modeling project include: San Francisco common yellowthroat (*Geothlypis trichas sinuosa*), northern harrier (*Circus cyaneus*), grasshopper sparrow (*Ammodramus savannarum*), Bewick's wren (*Thryomanes bewickii*), Wilson's warbler, white-crowned sparrow, Swainson's thrush (*Catharus ustulatus*), rufous-crowned sparrow (*Aimophila ruficeps*), western meadowlark (*Sturnella neglecta*), MacGillivray's warbler (*Oporornis tolmiei*), and dark-eyed junco (*Junco hyemalis*). Scrub habitat also attracts predators, such as Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), and other raptors.

GRASSLANDS

The grassland community forms a mosaic with the coastal scrub community and mixed evergreen forests (NPS 2005b, 194). At GGNRA, this community extends from mean sea level to nearly 2,600 feet above mean sea level (msl) and includes both coastal prairie grasslands and serpentine grasslands. California grasslands in general have been disturbed and changed due to cultivation, grazing, fire suppression, and

the spread of non-native, invasive plant species. The original, pristine grasslands in California were composed of perennial bunchgrasses with annual forbs occupying areas between tussocks, including purple needlegrass (*Nassella pulchra*), the designated California state grass, as well as tufted hair grass (*Deschampsia caespitosa*), blue wild rye (*Elymus glaucus*), and California oatgrass (*Danthonia californica*). Grasslands are found in GGNRA at Homestead Valley, Oakwood Valley, Alta Trail, Marin Headlands, Fort Baker, Milagra Ridge, Mori Point, Cattle Hill/Sweeney Ridge, and Rancho Corral de Tierra. A native grassland exists at Mori Point that is dominated by purple needlegrass, and native grasses also persist in the grasslands at Homestead Valley.

As stated previously, serpentine soils support grassland vegetation communities. Serpentine grasslands occur on well-developed serpentine soils formed by the rock serpentinite. Serpentenite occurs in fault zones and is associated with high levels of heavy metals, such as zinc and magnesium, and low levels of nutrients. Serpentine and native coastal grasslands are dominated by needlegrasses (*Nassella* spp.) and support some federally and state-listed plant species, such as Marin dwarf-flax, white-rayed pentachaeta (*Pentachaeta bellidiflora*), and fountain thistle (*Cirsium fontinale* var. *fontinale*); the federally and state-threatened Marin dwarf-flax is discussed in more detail in the "Special-status Species" section. The Mission Delores (San Francisco) campion (*Silene verecunda* ssp. *verecunda*), San Francisco owl's-clover (*Triphysaria floribunda*), Franciscan onion (*Allium peninsulare* var. *franciscanum*), and San Francisco wallflower (*Erysimum franciscanum*) are CNPS-listed plant species that can inhabit serpentine grasslands. There are mapped occurrences of the San Francisco wallflower at Rancho Corral de Tierra and suitable habitat exists for this species at Cattle Hill/Sweeney Ridge (URS Corporation 2010, Figure 17). Suitable habitat also exists for Franciscan onion at Rancho Corral de Tierra and Cattle Hill/Sweeney Ridge (URS Corporation 2010, Figure 17). At Rancho Corral de Tierra, the federally endangered Hickman's potentilla also occurs in grasslands. In GGNRA, serpentine grasslands are found north and east of where Lobos Creek enters the ocean at Baker Beach. These serpentine grasslands provide habitat for a variety of raptors and other birds as well as native mammals, reptiles, and amphibians. In addition, the Oakland mariposa lily (*Calochortus umbellatus*) is a CNPS-listed grassland plant species that occurs in a very limited distribution at Homestead Valley.

Today, many grasslands in the park are dominated by non-native annual grasses and forbs adapted to the climate (NPS 2005b, 194). As with many park sites in GGNRA, the spread of non-native plant species is a management concern and is discussed further in the "Invasive Plant Species" portion of this section. Additionally, the exclusion of grazing, extirpation of large native mammals, and suppression of wildfires have caused a decrease in grasslands and a marked increase in acreage of coyote brush, resulting in an increase in the acreage of coastal scrub community in the San Francisco Bay Area (McBride and Heady 1968). The grassland community also includes coastal prairie grasslands. The coastal prairie is found on coastal terraces with well-developed soils and is dominated by native perennial bunchgrasses of purple needlegrass, foothill needlegrass (*Nassella lepida*), California oatgrass, and many non-native grasses. Management to control weeds, reduce trampling (through park stewardship programs), and establish new populations at completed remediation sites is being conducted for Mission Delores campion; management to control invasive species and to reduce trampling is being conducted for San Francisco owl's clover.

A number of species of lupine occur in GGNRA, including three species of lupine that occur in the grassland community: silver-leaf lupine (*Lupinus albifrons*), summer lupine (*L. formosus*), and many-colored lupine (*L. variicolor*). Dudley's lupine (*Lupinus latifolius var. dudleyi*) is another lupine species found at Rancho Corral de Tierra (POST 2001, 28). Silver-leaf lupine is the primary host plant for the federally endangered mission blue butterfly. Mission blue butterfly habitat and host plants are found at Oakwood Valley, Alta Trail, Marin Headlands (Tennessee Valley, Slacker Ridge, Fort Barry Rifle Range, Wolfback Ridge, below Conzelman Road, Hawk Hill, etc.), Fort Baker, Milagra Ridge, Cattle Hill/Sweeney Ridge, and Rancho Corral de Tierra, which are discussed in detail in the "Special-status Species" section. In addition to the mission blue butterfly, many other species of invertebrates are primary

inhabitants of the grassland community, including the red admiral (*Vanessa atalanta*), American lady (*Vanessa virginiensis*), anise swallowtail (*Papilio zelicaon*), and common sulfurs (*Colias* spp.). Two federally listed species of butterflies, the San Bruno elfin butterfly (*Incisalia mossii bayensis*) and the mission blue butterfly (*Icaricia icaroides ssp. missionensis*), occur in grasslands at GGNRA and are discussed in more detail in the "Special-status Species" section.

Typical bird species of grasslands include western scrub jay, northern mockingbird (*Mimus polyglottos*), and a variety of species of sparrows and hawks. All the bird species discussed in this habitat are protected under the *Migratory Bird Treaty Act* (with the exception of starlings, pigeons, crows, and game birds). The California thrasher also uses grassland habitats at GGNRA, although it is not very common. Grasslands support many rodents (mice, gophers, and voles), which are hunted by raptors such as great horned owl (*Bubo virginianus*), red-tailed hawk, and American kestrel (*Falco sparverius*). Ground-nesting birds also make their home in the grassland, including several species of sparrows. Common mammalian species that occupy grassland habitats include raccoons, black-tailed deer, small rodents (voles, moles, and mice), jackrabbits (*Lepus californicus*), California ground squirrels (*Spermophilus beecheyi*), and striped skunks. Some species, such as the western harvest mouse (*Reithrodontomys megalotis*), appear to be restricted to areas where native perennial grasses persist. Carnivorous mammals that use grasslands include foxes, coyotes, bobcats, and mountain lions. Reptiles such as western fence lizards, gopher snakes (*Pituophis catenifer*), and alligator lizards (*Elgaria* spp.) have been observed in grasslands at GGNRA (Semenoff-Irving and Howell 2005, 17).

WETLANDS AND OPEN WATER

GGNRA has abundant wetland resources, including estuarine, riverine, and palustrine wetlands. Wetlands, according to the definition developed by the U.S. Fish and Wildlife Service (USFWS) and adopted by the NPS, are lands transitional between terrestrial and aquatic systems, where the water table is usually at or near the surface or the land is covered by shallow water (Cowardin et al. 1979, 11). Typical wetlands in GGNRA include wet meadows, seeps, streams, riparian forests, ponds, and lagoons. Deepwater habitats such as rivers, lakes, and estuaries are not technically wetlands, but are classified as aquatic sites using the same classification system (NPS 2006a, section 4.6.5). Wetlands and open water communities, including ponds, seeps, freshwater wetlands, lagoons, and salt marshes, are discussed in this section. Streams and riparian forests are discussed in detail in the sections that follow.

Crissy Field Marsh
Credit: NPS

Wetlands in GGNRA are generally located in valley bottoms, with seeps and small intermittent streams reaching into the higher portions of the watersheds (NPS 2005b, 203). Estuarine wetlands and salt marshes also exist at GGNRA. The following areas have herbaceous wetlands and woody vegetation in GGNRA: Crissy Field (palustrine and estuarine wetlands), Muir Beach, Baker Beach (seeps along bluffs and Lobos Creek), Rodeo Beach (Rodeo Lagoon and Rodeo Lake), Lands End (seeps), Mori Point (four created ponds with associated wetlands), and Milagra Ridge (pond). Many of these wetland areas at GGNRA either have undergone or are currently undergoing restoration efforts, as described in the paragraphs below by project site. Other wetland areas also exist at GGNRA, including at Tennessee Valley, but these particular wetland areas are not described in detail because they are not affected by dog activities at the park.

Hydric soils are defined as a soil formed under conditions of flooding, saturation, or ponding extended enough for the soil to develop anaerobic conditions (USACE 1987, 19) and are present in GGNRA areas characterized as wetlands. Hydric soils are present at Oakwood Valley and include the Blucher-Cole complex. This complex runs along the Oakwood Valley floor, experiences occasional flooding, and is characterized as silty clay loam. Rodeo Clay Loam is a hydric soil located in the Marin Headlands which runs along the Tennessee Valley floor. These clay loam and clay soils are poorly drained and have a high available water capacity (the amount of water soils can store that is available for use by plants) (NRCS 2004a, 17). There are hydric soils located at Tennessee Valley, inland of Tennessee Cove and along the Elk Valley Creek in the Marin Headlands (NRCS 2004a, 16). These soils are flat, very poorly drained, and have a very low available water capacity (NRCS 2004a, 16).

Hydric soils support hydrophytic plant species that grow in wetland areas. The majority of wetlands in the park are herbaceous wetlands, which have vegetation consisting of a mix of low-growing species of sedges (*Carex* spp. and *Cyperus* spp.), rushes (*Juncus* spp.), bulrushes (*Scirpus* spp.), cattails (*Typha* spp.), horsetails (*Equisetum* spp.), and other wetland-dependent species, as well as non-native species of wetland-tolerant grasses and forbs. Areas covered with various reeds along the shoreline of lagoons and ponds, herbaceous strips of vegetation along perennial and ephemeral stream courses, and isolated wetland patches where seeps emerge are found throughout the park (NPS 2005b, 196). Freshwater seeps, where groundwater flows onto the surface, are dominated by rushes and sedges and occur along the bluffs north of Baker Beach and are widely distributed at Lands End (May & Assoc. 2005, 13). These seeps and small wetlands provide a source of freshwater and vegetative cover for songbirds and other wildlife, as well as possible breeding habitat for amphibians (NPS 1993, 6-11, 6-12). All the bird species discussed in this habitat are protected under the *Migratory Bird Treaty Act* (with the exception of starlings, pigeons, crows, and game birds).

Both freshwater and estuarine wetlands exist at Crissy Field. Freshwater wetlands in the swale include tule reed (*Scirpus californicus*) and cattails. Crissy Field Tidal Marsh supports salt marsh habitat and is closed to public access per the GGNRA Compendium. From 1998 through 2000, the restoration of Crissy Field included the restoration of an 18-acre tidal marsh linked to the San Francisco Bay (NPS 2010a, 1). The Point Reyes (north coast) bird's-beak (*Cordylanthus maritimus* ssp. *palustris*) is the only CNPS-listed plant species that occurs in coastal salt marshes. This small annual was introduced to the salt marsh at Crissy Field in 2001 (NPS 2010a, 1). Following restoration efforts, nearly 100 species of birds have been documented using the tidal marsh at Crissy Field, including migrating ducks, pelagic birds diving for fish, and shorebirds (Ward and Ablog 2006, 1). The park has installed fencing to restrict access by dogs and people to Crissy Field Tidal Marsh, and signage has been installed to educate visitors on the access restrictions; however, dogs gain access to the marsh through the tidal channel under the pedestrian bridge, and have been observed by park staff in the tidal marsh (NPS 2010a, 1).

Rodeo Lagoon is located in Marin County at Rodeo Beach and consists of herbaceous wetlands and wet meadows. An estuarine emergent wetland fringe surrounds Rodeo Lagoon, which is sustained by a mix of freshwater and tidal water input. Central California steelhead trout (*Oncorhynchus mykiss*) occur in the drainages to Rodeo Lagoon (NPS 2005b, 211). Rodeo Lake provides suitable breeding habitat for California red-legged frogs (*Rana draytonii*), while both the lagoon and the lake are used outside the breeding season for rearing (Fong and Campo 2006). Rodeo Lagoon provides foraging and loafing habitat for a variety of aquatic birds, such as California brown pelicans, grebes, gulls, terns, cormorants, shorebirds, ducks, egrets, and herons. The lagoon waters support several fish species, including native species such as prickly sculpin (*Cottus asper*) and threespine stickleback (*Gasterosteus aculeatus*). River otters have also been observed in the lagoon. Rodeo Lagoon is closed to public access for overall resource protection per the GGNRA Compendium, but NPS staff members regularly observe dogs in the lagoon. The park has estimated that they observe dogs in the lagoon at least once a week and during good weather on a daily basis.

A small, intermittently tidal lagoon with open water is located adjacent to Muir Beach. The lagoon is fed by Redwood Creek. The restoration of lower Redwood Creek, including the lagoon, began in 2009. The restoration included efforts to repair the natural functions of the floodplain, which will increase native habitat and reduce flooding. The restoration achieved the following: restored the surrounding floodplain, restored the tidal lagoon, created a new creek channel, tributaries, and side channels, removed an old levee road, created breeding ponds for California red-legged frogs, and removal of nonnative plant species. Surveys prior to the restoration found that the diversity of waterbirds was low, with only mallards (*Anas platyrhynchos*), killdeer (*Charadrius vociferus*), and bufflehead (*Bucephala albeola*) present, with mallards representing 88 percent of the total number of individuals observed (Dybala 2002, 4).

The NPS created four ponds at Mori Point to enhance the freshwater wetland habitat and provide foraging habitat for the San Francisco garter snake and western pond turtle (*Actinemys marmorata*). These ponds also provide breeding and rearing habitat for the California red-legged frog. The San Francisco garter snake's main prey item is the California red-legged frog, and both species are discussed in detail in the "Special-status Species" section. Native wetland plant species were planted around the ponds and invasive plant species were removed. Educational signage and fences have been placed around the ponds and wetland habitat at Mori Point to prevent direct impacts to frogs and indirect impacts to frog habitat. The fence that currently exists around the ponds excludes both visitors and dogs.

Several ponds and stream channels were also created during the restoration of Redwood Creek at Muir Beach further increasing California red-legged frog habitat. These ponds will likely also provide foraging habitat for the San Francisco garter snake and western pond turtle. Invasive plant management and the planting of native vegetation are ongoing.

NATIVE HARDWOOD FOREST

This variable community extends from approximately 200 to 2,500 feet above msl in elevation, and is dominated by a number of oak species (*Quercus* spp.), California bay laurel (*Umbellularia californica*), and tanbark oak (*Notholithocarpus densiflorus*). Along the moisture boundary of this mixed evergreen forest is the Douglas-fir/redwood community, and along the xeric boundary are coastal scrub and grassland habitats (NPS 2005b, 196). In the planning area at GGNRA, native hardwood forests exist at Oakwood Valley, Alta Trail/Orchard Fire Road/Pacheco Fire Road, and Fort Baker. The Douglas-fir and coast redwood community is found sporadically in portions of Homestead Valley and within Oakwood Valley but outside the area accessed by dogs and is not discussed further in this final plan/EIS.

Coast live oak (*Quercus agrifolia*) dominates this community at elevations below 1,000 feet above msl. It is often the only species present on hills in the foggy, coastal climate of GGNRA. Interior live oak (*Q. wislizenii*) occasionally replaces coast live oak in canyon bottoms and on north-facing slopes. As the community approaches 1,000 feet above msl, California bay, tanbark oak, and other hardwoods become common (NPS 2005b, 196). Since 1995, large numbers of tanbark oaks, coast live oaks, and black oaks (*Q. kelloggii*) in California coastal counties have been dying from a disease referred to as sudden oak death. Sudden oak death is caused by a fungus-like organism, *Phytophthora ramorum*, which is a very aggressive pathogen that can infect and kill otherwise healthy trees and may be spread through infected wood, soil, and rainwater (NPS 2013a, 1). At GGNRA, sudden oak death has killed many of the tanbark oaks and has also affected other hardwood tree species (NPS 2011c).

In forested habitats, bushtits (*Psaltriparus minimus*), chestnut-backed chickadees (*Poecile rufescens*), dark-eyed juncos, Pacific-slope flycatchers (*Empidonax difficilis*), and winter wrens (*Troglodytes troglodytes*) were commonly detected during point count censuses in 1999 and 2000 (PRBO 2002, 1). The native hardwood forest community also provides habitat for the threatened northern spotted owl (*Strix occidentalis caurina*), which is discussed in more detail in the "Special-status Species" section.

Live oaks are known for attracting high insect diversity, and thus, birds that are gleaners (insectivores). Oaks also attract jays and acorn woodpeckers, both of which cache acorns. They also provide cover and shade in what is otherwise extremely exposed habitat. All the bird species discussed in this habitat are protected under the *Migratory Bird Treaty Act* (with the exception of starlings, pigeons, crows, and game birds). The hardwood forest provides habitat for the vagrant shrew (*Sorex vagrans*), Trowbridge's shrew (*Sorex trowbridgii*), Sonoma chipmunk (*Tamias sonomae*), western gray squirrel (*Sciurus griseus*), and dusky-footed woodrat (*Neotoma fuscipes*). Wide-ranging mammals such as the bobcat and coyote will travel through or use the native hardwood forest habitat as well.

RIPARIAN FORESTS AND STREAMS

Riparian plant communities in GGNRA include streamside corridors of forests, shrubs, and herbaceous vegetation that tolerate moist conditions. The sites in GGNRA that possess riparian habitat include: Easkoot Creek at Stinson Beach, Redwood Creek at Muir Beach in Marin County, Marin Headlands Trails along the Rodeo Valley Trail Corridor from Rodeo Beach to Capehart Housing, and Lobos Creek at Baker Beach. The area at the Lobos Creek inlet that supports riparian vegetation is generally not used by visitors with dogs and is not affected by this final plan/EIS. At Easkoot Creek, the creek is densely vegetated with riparian plant species and generally difficult to access. These creeks are closed per the GGNRA Compendium (NPS 2008b, 9). As a result, riparian vegetation at both Lobos Creek at Baker Beach and Easkoot Creek at Stinson Beach are not discussed further in this section. Below and discussed in more detail include the following sites: Muir Beach (Redwood Creek), Marin Headlands Trails (along the Rodeo Valley Trail Corridor from Rodeo Beach to Capehart Housing), and Rancho Corral de Tierra (along most streams). Other riparian areas exist in GGNRA, but these areas are outside the scope of this project. Streamside forests and shrub areas are dominated by broad-leaved deciduous trees or shrubs, most commonly arroyo and Pacific willows (*Salix lasiolepis* and *S. lucida* ssp. *lasiandra*) and occasionally red alder (*Alnus rubra*). The understory is typically dense, with a variety of shrubs, including berries, such as the native salmonberry (*Rubus spectabilis*), thimbleberry (*R. parviflorus*), and California blackberry (*R. ursinus*) as well as non-natives such as Himalayan blackberry (*R. discolor*) and Cape ivy (*Delairea odorata*). In addition to shrubs, numerous herbaceous species, including ferns, rushes, and sedges, dominate the understory. Non-native trees, including eucalyptus (*Eucalyptus* spp.) and Monterey cypress (*Cupressus macrocarpa*), have become established in some riparian forests in the park (NPS 2005b, 196). These non-native species are discussed in more detail in the "Invasive Plant Species" section. Riparian forests provide habitat for the following CNPS-listed plant species: western leatherwood (*Dirca occidentalis*) and California bottlebrush grass (*Elymus californicus*). Suitable habitat for both of these CNPS-listed species exists in riparian forests along streams at Rancho Corral de Tierra in the project area (URS Corporation 2010, Figures 14 and 24).

Riparian trees support many invertebrates, such as insects, that are important to resident and migrating songbirds (NPS 2009c, 205). Some commonly observed bird species that nest in riparian habitats at GGNRA include Swainson's thrush (*Catharus ustulatus*), Wilson's warbler, warbling vireo (*Vireo gilvus*), song sparrow (*Melospiza melodia*), Brewer's blackbird (*Euphagus cyanocephalus*), and American goldfinch (*Carduelis tristis*) (Williams 2003). Other bird species that use riparian habitats at GGNRA include the red-winged blackbird (*Agelaius phoeniceus*), American robin (*Turdus migratorius*), cedar waxwing (*Bombycilla cedrorum*), and black-headed grosbeak (*Pheucticus melanocephalus*), as determined by point counts from 1998 to 2002 (PRBO 2002, 1). The riparian forest also provides habitat for the threatened northern spotted owl, which is discussed in more detail in the "Special-status Species" section. All the bird species discussed in this habitat are protected under the *Migratory Bird Treaty Act* (with the exception of starlings, pigeons, crows, and game birds). Riparian corridors also provide important habitat for amphibians such as tree frogs, newts, salamanders, and the endangered California red-legged frog, as well as the arboreal salamander (*Aneides lugubris*), California toad (*Bufo boreas halophilus*), coast range newt (*Taricha torosa torosa*), and western fence lizard. Riparian areas provide a

water supply and cover habitat for flying insects and, in turn, for bats. Several bat species have been recorded using riparian habitats such as Lobos Creek and Redwood Creek in the park, including the Mexican free-tailed bat and California myotis (*Myotis californicus*). Because roost sites for bat species are generally not accessible to dogs, it is not expected that bats would be affected by dogs. Therefore, bats are excluded from further discussion in this final plan/EIS. The freshwater stream Lobos Creek supports a variety of invertebrates, including water striders, dragonflies, and water beetles. Threespine sticklebacks also occupy Lobos Creek.

The Muir Beach area is at the mouth of the Redwood Creek watershed, which features a riparian corridor that is currently dominated by red alders and some arroyo willows. The Redwood Creek watershed extends from the peaks of Marin County's tallest mountain, Mount Tamalpais, to the Pacific Ocean at Muir Beach. Pacific tree frogs (*Hyla regilla*) and California newts (*Taricha torosa*) inhabit both the creek and riparian habitat at Muir Beach. California giant salamanders (*Dicamptodon ensatus*) inhabit areas higher up Redwood Creek. Each winter coho salmon (*Oncorhynchus kisutch*) and steelhead trout return to Redwood Creek to spawn where they were born. Steelhead trout and coho salmon in Redwood Creek are federally listed as threatened and endangered, respectively. These species are discussed in more detail in the "Special-status Species" section. The park has closed the Redwood Creek area to people and dogs, including the trail along Redwood Creek and at the creek crossing near Muir Beach. Off-leash dogs have frequently been observed in Redwood Creek and Redwood Lagoon despite these closures (appendix G). A post-and-cable fence installed by NPS between lower Redwood Creek and lagoon is intended to discourage visitors from accessing the water; however, it does not physically exclude dogs or visitors from the area. The lagoon restoration at Muir Beach, discussed previously, also aims to improve the quality and quantity of coho salmon and steelhead trout habitat (NPS 2008c). Within the Marin Headlands Trails, the Rodeo Valley Trail Corridor parallels riparian habitat for its entire length (along the Rodeo Valley Trail Corridor from Rodeo Beach to Capehart Housing) and the Lagoon Loop Trail both passes through and is adjacent to riparian habitat along both sides of Rodeo Lagoon.

Restoration of Redwood Creek at Muir Beach has been ongoing since 2009. The restoration plan was split into five phases. Phase 1 consisted of restoring floodplain and tidal lagoon habitats for coho salmon and steelhead trout utilization. This phase also removed a portion of the parking lot, created a breeding pond for California red-legged frogs, and planted native riparian and wetland plants. Phase 2 of this restoration plan constructed 550 feet of new creek channel to provide habitat for coho salmon and steelhead trout. Stream channel alignment and the creation of two new backwater habitats and an off-channel pond were completed in phase 3 of the Redwood Creek Restoration Plan. A portion of an old levee road was also removed in this phase to reconnect the floodplain and prevent fish stranding. A pedestrian bridge was also constructed that will prevent human interference with natural creek and wetland processes. Phase 4 of the restoration includes invasive plant removal and planting native vegetation. This phase also included a planning and community involvement segment in preparation for phase 5, which began in early 2014. The rotation of the parking lot and the extension of the pedestrian bridge portions of this phase have been completed. Native plant revegetation and invasive species management is ongoing (NPS n.d.h).

DOUGLAS-FIR AND COAST REDWOOD

Many species contribute to the Douglas-fir and coast redwood forest community. Major overstory and understory tree species include coast redwood (*Sequoia sempervirens*), Douglas-fir (*Pseudotsuga menziesii*), California bay laurel, tanbark oak, California hazel (*Corylus californica*), and madrone (*Arbutus menziesii*). The coast redwood requires moist areas in valleys or near springs and is characteristically associated with tanbark oak and California bay laurel. In the understory of the coast redwood community, shrubs such as hazelnut (*Corylus* spp.), thimbleberry, and wood rose (*Rosa gymnocarpa*) are common, as well as wildflowers such as wild ginger (*Asarum* spp.), trillium (*Trillium* spp.), redwood sorrel (*Oxalis oregana*), sweet coltsfoot (*Petasites frigidus*), and elk clover (*Aralia*

californica); sword ferns (*Polystichum* spp.) are a common ground cover (NPS 2009c). The Douglas-fir and coast redwood forest community is found sporadically in portions of Homestead Valley and Oakwood Valley. The inner gorges of the watershed near Stinson Beach and the habitat at Muir Woods are dominated by the Douglas-fir and coast redwood community, but these areas are outside the scope of this project.

The Douglas-fir and coast redwood community provides habitat for the barred owl (*Strix varia*) and also for the threatened northern spotted owl, which is discussed in more detail in the "Special-status Species" section. Originally an eastern species closely related to the northern spotted owl, the barred owl has expanded its range westward and its range now overlaps with that of the northern spotted owl in most of the coastal woodlands of the west. The barred owl competes with the northern spotted owl for prey and habitat and is currently the most important threat facing the northern spotted owl (USFWS 2011a, vii). All the bird species discussed in this habitat are protected under the *Migratory Bird Treaty Act* (with the exception of starlings, pigeons, crows, and game birds). Many small mammals, such as the gray squirrel and Sonoma chipmunk, inhabit the forest canopy, while larger mammals, like raccoons and gray foxes, seek shelter in hollows in trees and logs. Amphibians such as the California giant salamander, slender salamander (*Batrachoseps* spp.), and rough-skinned newt (*Taricha granulosa*) inhabit the leaf litter on the forest floor. There are few insects, due to repellants produced by the tannins in redwood bark, and the deep shade of the coniferous canopy limits the number of flowers and fruit produced. This lack of food sources restricts the diversity of bird species, although the old growth forest does support the threatened northern spotted owl, as discussed above (NPS 2009c).

MONTEREY CYPRESS

Stands of the non-native tree Monterey cypress are found within GGNRA, including at the Fort Miley site, at Lands End, and in several locations at Rancho Corral de Tierra. The park has targeted the 22 most invasive non-native species for control, including Monterey pine and Monterey cypress. Most areas of Monterey cypress at Rancho Corral de Tierra were planted for wind breaks and as timber sources in the 1800s, as well as later for street trees and to provide shade. While these trees provide habitat for some nesting bird species, the creation of a densely shaded canopy and acidic soils disrupt the natural distribution of native species at Rancho Corral de Tierra (POST 2001, 54). In 1933, the City of San Francisco and the federal government's Civilian Works Administration planted thousands of Monterey Cypress around Lands End. East Fort Miley is dominated by older stands of densely planted Monterey cypress, but also includes some wetland/riparian vegetation around the fringes of the site. A large portion of Fort Miley is developed and only a small portion of the entire site supports mature, coniferous vegetation (which includes primarily the non-native Monterey cypress) in areas that are open to dogs. The densely planted trees leave little to no opportunity for light to reach the ground, so ground cover is minimal to non-existent except in areas where old trees have died and/or fallen. The dense Monterey cypress canopy with little understory diminishes songbird use of the site, but common landbirds most likely use this habitat; the pygmy nuthatch and Swainson's thrush (in migration) may utilize this habitat. Dark-eyed juncos, California towhees, song sparrows, white-crowned sparrows, and spotted Towhees may use the edges of this forested habitat at Fort Miley for nesting and foraging. Additionally, raccoons, and skunks are probably present and non-native red foxes and feral cats are common in the vicinity of the Navy Memorial parking lot and Fort Miley. Coyotes are also present and may have recently been denning in the Fort Miley area. Non-native species present in this habitat include black and Norway rats (*Rattus rattus* and *R. norvegicus,* respectively) and European starlings. Slender salamanders are probably present at Fort Miley as well.

INVASIVE PLANT SPECIES

The park stewardship programs at GGNRA coordinate habitat restoration activities in over 10,000 acres of the park (NPS *Government Performance Results Act* reporting). An invasive species is defined as a non-native or exotic species whose introduction causes or is likely to cause economic or environmental harm or harm to human, animal, or plant health (NISC 2006, 1). Non-native plant species thrive in the park, particularly in areas subject to intensive historical land use (grazing, military occupation) or adjacent to urbanized areas that are a constant source of invasive weeds (NPS 1999, 23). The spread of non-native plants represents the most significant threat to the biodiversity of GGNRA and affects approximately 85 percent of the park's estimated 80 vegetation alliances (NPS 1999, 23). Non-native species directly threaten habitat for listed species, including the federally endangered mission blue and San Bruno elfin butterflies, Presidio manzanita, Presidio clarkia, and San Francisco lessingia, as well other special-status plants (state and CNPS listed) (NPS 1999, 23). GGNRA currently is targeting over 80 invasive plant species parkwide, which require constant stewardship. The following paragraphs describe invasive and/or non-native species by site in GGNRA, where information is available.

Sites in GGNRA in Marin County, San Francisco County, and San Mateo County all have documented problematic invasive plant species. Particularly at Milagra Ridge, invasive, non-native plants continue to be the primary threat to native plant communities. The species of most concern include Cape ivy, pampas grass (*Cortaderia selloana*), French broom, Scotch broom (*Cytisus scoparius*), ice plant, cotoneaster (*Cotoneaster* sp.), Monterey pine (*Pinus radiata*), Monterey cypress, and eucalyptus. Several invasive plant species are also of concern at Rancho Corral de Tierra, particularly Cape ivy, French broom, eucalyptus and pampas grass (POST 2001, 56; URS Corporation 2010, Figure 2).

As with other park sites in GGNRA, the spread of non-native species is a management concern at Mori Point. Plant species that have been targeted for removal include pampas grass, Cape ivy, ice plant, French and Scotch broom, and cotoneaster. The *Mori Point Restoration and Trail Plan* includes measures for preserving and restoring the ecological integrity of Mori Point habitats by reducing threats to native plant communities and natural processes through restoration of native plant communities (NPS 2006e, 1).

At Fort Funston, the topography, stability, and soils of San Francisco dune remnants have been highly modified by the residual effects of past introductions of dune-stabilizing vegetation starting in the 1870s. Non-native European beachgrass was first planted in the 1870s to stabilize otherwise mobile dunes and has created steep, hummocky topography; the non-native ice plant was planted to stabilize both mobile and relatively stable dunes. Even though these plant species were historically planted for dune stabilization, they are now being targeted for removal. Non-native trees and shrubs, such as Monterey cypress, eucalyptus, and wattle (*Acacia* spp.), were also planted to act as strong baffles to dune-forming winds (Shulztiski and Russell 2004, 2).

SPECIAL-STATUS SPECIES

Special-status species are plants and animals that are legally protected under the state and federal ESA of 1973 or other regulations, as well as species that are considered sufficiently rare by the scientific community to qualify for such status. The federal ESA was enacted to protect plant and animal species considered to be in danger of extinction and affords legal protection to species listed as endangered and threatened, including protection of their habitats. Critical habitat is defined in the federal ESA as a specific geographic area that contains habitat features essential for the conservation of a threatened or endangered species (USFWS 2005b, 1). The USFWS of the U.S. Department of the Interior and the National Oceanic and Atmospheric Administration Fisheries of the Department of Commerce share responsibility for administration of the federal ESA. The terms *threatened* and *endangered* generally describe the official federal status of vulnerable species, as defined by the federal ESA. Additional federal

regulations protect both listed and non-listed wildlife species in the park, including the *Fish and Wildlife Coordination Act of 1934* (as amended), the *Bald and Golden Eagle Protection Act*, the *Marine Mammal Protection Act*, and the *Migratory Bird Treaty Act*.

Designated critical habitat areas are necessary for the recovery of endangered or threatened species, even though the species of concern may not be documented in these areas. An evolutionarily significant unit is considered to be a distinct population segment and thus a species under the federal ESA. When applicable, critical habitat is discussed in the paragraphs below for listed species. The constituent elements of critical habitat defined by the USFWS and National Oceanic and Atmospheric Administration Fisheries (1998, 4-36) as follows:

> Physical and biological features of designated or proposed critical habitat essential to the conservation of the species, including, but not limited to: (1) space for individual and population growth, and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; (5) habitats that are protected from disturbance or are representative of the historic geographic and ecological distributions of a species.

The federal ESA was enacted to protect plant and animal species considered to be in danger of extinction and affords legal protection to species listed as endangered and threatened, including protection of their habitats.

The California ESA is similar to the federal ESA both in process and substance; it is intended to provide additional protection to threatened and endangered species in California. The California ESA does not supersede the federal ESA, but operates in conjunction with it. The California Department of Fish and Game maintains an informal list of plant and wildlife species of special concern because of population declines and restricted distributions, and/or because they are associated with habitats that are declining in California. The CNPS has developed lists of plants of special concern in California. Although federal agencies are not required to comply with California's Fish and Game Code, the NPS makes every reasonable effort to conduct its actions in a manner consistent with relevant state laws and regulations. Due to the extensive numbers of plant and wildlife species included on the lists produced by the CNPS and the California Department of Fish and Game, these species are discussed in the "Vegetation and Wildlife" section. However, these species are still given equal consideration in this final plan/EIS compared to the federally and state-listed threatened and endangered species that are included in this section. In addition to special concern species, some animal species with the "fully protected" status also exist at GGNRA; most fully protected species have also been listed as threatened or endangered species under the state or federal ESA (DFG 2010, 1). Fully protected species are noted in this section as applicable.

GGNRA has one of the highest numbers of threatened and endangered species occurring within its boundaries of any unit of the NPS in the continental United States (NPS 2009c). Nearly all of the park's threatened and endangered species for GGNRA were listed after the 1979 Pet Policy; changing conditions in the park can therefore affect listed species. If an observation of a species has been entered in GGNRA records, it is assumed that this species could occur at the park wherever suitable habitat exists. If habitat is not currently found at Marin County, San Francisco County, or San Mateo County Park sites for a particular species of special status, the species is discounted from further analysis and discussion. "Appendix H: Special-status Species" includes an annotated table of all listed or candidate wildlife or plant species potentially present in the study area of GGNRA and affected by this final plan/EIS, as well as a brief summary of presence/absence of suitable habitat and any distribution notes. This list in appendix H includes species that could be affected by dog management activities based upon the presence

of suitable habitat in the previously defined sites of the planning area for this project. Federally and state-listed species are discussed in the following sections when the listed species occurs, or potential habitat is present in areas that allow dogs at specific GGNRA sites. Although habitats at GGNRA support many species with special status, only those species potentially affected by this final plan/EIS are discussed in this section. Special-status species that are considered vagrants (e.g., species where individuals have been documented in the park on occasion) are not discussed further because these species are not likely to be affected by the final plan/EIS due to the short-term nature of their presence at GGNRA. Also, marine mammal species such as whales and sea otters are not expected to be affected by dogs. However, the stranding of sick and injured pinnipeds (and sometimes healthy pinnipeds as well) is common on park beaches of GGNRA, as described in table 8. Because stranded marine mammals may provide an opportunity for contact or disturbance by dogs on beaches, the species in this category are included in this section for discussion.

FEDERALLY AND STATE-LISTED THREATENED AND ENDANGERED SPECIES AND CANDIDATE SPECIES

The following wildlife and plant species are discussed in this section: species listed or proposed for listing as threatened or endangered under the California or federal ESA (no candidate species are found in GGNRA).

Endangered species. If the USFWS determines that a species is on the brink of extinction, it is listed as endangered. Listing as endangered gives the species protection under section 9 of the federal ESA, which prohibits the unauthorized take of a federally listed endangered wildlife species and malicious damage or destruction of federally listed plant species.

Threatened species. If the USFWS determines that a species is experiencing serious threats that may eventually lead to its extinction but the situation is not yet critical, the species is classified as threatened. Species listed as threatened do not automatically have protection under the federal ESA, but the USFWS has applied most of the same protection described above to threatened species (authorized by section 4(d) of the federal ESA).

Because of the diversity of habitats and sensitive areas available at GGNRA and the protected nature of NPS lands, a total of 21 threatened and endangered species and associated critical habitat (when applicable) are being considered in this final plan/EIS. Table 9 presents the wildlife and plant species being considered in this final plan/EIS that have federal and/or state status. The wildlife and plant species included in table 9 either have mapped occurrences at the GGNRA sites described or the sites provide potential habitat to that particular listed species. A detailed life history of each species follows the table.

TABLE 9. FEDERALLY AND STATE-LISTED SPECIES CONSIDERED IN THIS FINAL PLAN/EIS

Group	Scientific Name	Common Name	Federal Status[a]	State Status[a]	GGNRA Location of Mapped Occurrence or Potential Habitat
Invertebrate	*Callophrys mossii bayensis*	San Bruno elfin butterfly	FE	—	Milagra Ridge and Rancho Corral de Tierra
Invertebrate	*Icaricia icarioides ssp. missionensis*	Mission blue butterfly	FE	—	Alta Trail / Orchard Fire Road / Pacheco Fire Road, Oakwood Valley, Marin Headlands Trails (Tennessee Valley), Fort Baker, Milagra Ridge, Sweeney Ridge / Cattle Hill, and Rancho Corral de Tierra
Fish	*Eucyclogobius newberryi*	Tidewater goby	FE, CH	—	Rodeo Beach (Rodeo Lagoon)
Fish	*Oncorhynchus kisutch*	Coho salmon—central California coast	FE, CH	SE	Muir Beach (Redwood Creek)
Fish	*Oncorhynchus mykiss*	Steelhead—central California coast	FT, CH	—	Stinson Beach (Easkoot Creek), Muir Beach (Redwood Creek), Rodeo Beach (Rodeo Lagoon), Marin Headlands Trails (Rodeo Creek and Gerbode Creek), and Rancho Corral de Tierra (Denniston Creek, Martini Creek, and San Vincente Creek)
Amphibian	*Rana draytonii*	California red-legged frog	FT, CH	—	Muir Beach, Marin Headlands Trails (Rodeo Lake, Rodeo Lagoon, and Tennessee Valley), Mori Point, Milagra Ridge, Sweeney Ridge / Cattle Hill, and Rancho Corral de Tierra
Reptile	*Actinemys marmorata*	Western pond turtle	Under Review[b]	—	Muir Beach (Redwood Creek), Mori Point
Reptile	*Thamnophis sirtalis tetrataenia*	San Francisco garter snake	FE	SE	Mori Point, Milagra Ridge, Sweeney Ridge / Cattle Hill, and Rancho Corral de Tierra
Bird	*Charadrius alexandrinus nivosus*	Western snowy plover	FT, CH[c]	—	Crissy Field, Ocean Beach
Bird	*Riparia riparia*	Bank swallow	—	ST	Fort Funston
Bird	*Strix occidentalis caurina*	Northern spotted owl	FT	—	Homestead Valley, Oakwood Valley, and Marin Headlands Trails
Mammal	*Arctocephalus townsendi*	Guadalupe fur seal	FT	ST	Potential stranding on all beach areas
Mammal	*Eumetopias jubatus*	Steller sea lion	FT, CH[c]	—	Potential stranding on all beach areas
Plant	*Arenaria paludicola*	Marsh sandwort	FE	SE	Marin Headlands Trails
Plant	*Arctostaphylos franciscana*	Franciscan manzanita	FE		Fort Point and Baker Beach

Group	Scientific Name	Common Name	Federal Status[a]	State Status[a]	GGNRA Location of Mapped Occurrence or Potential Habitat
Plant	*Arctostaphylos hookeri ssp. ravenii*	Presidio (Raven's) Manzanita	FE	SE	Baker Beach
Plant	*Clarkia franciscana*	Presidio Clarkia	FE		Baker Beach
Plant	*Hesperolinon congestum*	Marin dwarf-flax (Marin western flax)	FT	ST	Baker Beach
Plant	*Lessingia germanorum*	San Francisco lessingia	FE	SE	Baker Beach and Fort Funston
Plant	*Potentilla hickmanii*	Hickman's potentilla (Hickman's cinquefoil)	FE	SE	Mori Point, and Rancho Corral de Tierra

[a] FE = federally endangered, FT = federally threatened, CH = critical habitat, SE = state endangered, ST = state threatened.

[b] = Petition to list the Western Pond Turtle as an Endangered or Threatened Species under review - 90-Day Findings on 10 Petitions; Notice of petition findings and initiation of status reviews

[c] = Critical habitat has been designated for this species, but the critical habitat does not occur in GGNRA.

ENDANGERED, THREATENED, AND CANDIDATE SPECIES: WILDLIFE

San Bruno Elfin Butterfly (*Callophrys mossii* ssp. *bayensis*)

The San Bruno elfin butterfly is federally listed as endangered. The USFWS has prepared a recovery plan for this species with the objective of protecting, maintaining, and enhancing existing populations of the two endangered butterfly species, the San Bruno elfin and mission blue butterflies (USFWS 1984, 2). The larval host plant for the San Bruno elfin butterfly is sedum (*Sedum spathulifolium*), a succulent that grows on rocky, north-facing slopes along the coast (coastal scrub) and occurs in colonies at Milagra Ridge in GGNRA (Newby 2000, 4). Existing San Bruno elfin butterfly populations are closely tied to their sedum host and nectar plants where the butterfly lays its eggs and the larvae develop; adults emerge for only a short time (Newby 2000, 4). At Milagra Ridge, San Bruno elfin populations and sedum occur on rocky outcrops that are relatively inaccessible to people and dogs (NPS 2005b, 206). At Rancho Corral de Tierra, these sedum communities also occur in rocky out-crops at the site, and the butterfly has been observed at the site and in the vicinity, although these observations have been unconfirmed (POST 2001, 34; URS Corporation 2010, 3-4 and Figure 8). At Milagra Ridge, GGNRA natural resource managers follow the recommendations found in the *Recovery Plan for San Bruno Elfin and Mission Blue Butterflies* (USFWS 1984, 48) by periodically monitoring the population. Only on-leash dog walking is allowed on trails in Milagra Ridge, and trails are routed away from known habitat to minimize possible impacts to this species.

Mission Blue Butterfly (*Icaricia icarioides* ssp. *missionensis*)

The mission blue butterfly is federally listed as endangered (DFG 2009, 3). The mission blue butterfly is very closely tied to just three species of lupine, called host plants, which are the sole food source for mission blue caterpillars (NPS 2009d, 1): *Lupinus albifrons*, *L. formosus*, and *L. variicolor*. Larvae feed on lupine host plants and undergo diapauses (similar to hibernation) at the base of the lupine plants and emerge in the spring. The larvae then undergo a series of molts and metamorphose into butterflies that live 7-10 days (less than 3 percent of the entire life cycle) during a single, brief period each spring. Lupine tends to grow in thin, rocky soils, particularly in patches of grasslands found in areas of coastal scrub, favoring sites that have been recently disturbed (NPS 2009d, 1). Lupine will typically not grow in areas dominated by dense areas of coastal scrub or chaparral. The lupine host plant species that support

mission blue butterflies are disturbance-associated species, which means the plants require disturbance prior to growth. In the past, periodic fires and Tule elk grazing kept shrubs and trees from taking over the grasslands that supported lupine and provided the disturbance needed to stimulate lupine seeds to germinate. Fire suppression and the loss of elk have potentially contributed to declines in both the quality and quantity of lupine habitat (NPS 2009d, 1). In addition to more natural areas, the lupine host plants are also found along road cuts, former quarry sites, and along and adjacent to trails and in trail treads in some locations at GGNRA. The mission blue butterfly has been documented at Alta Trail / Orchard Fire Road / Pacheco Fire Road, Oakwood Valley, the Marin Headlands Trails, Fort Baker, Milagra Ridge, and Sweeney Ridge / Cattle Hill; Tennessee Valley, in the Marin Headlands Trails, also has mission blue butterfly habitat and documented occurrences of mission blue butterfly (Bennett 2008, 8; USFWS 1984, 1). Lupine host plants have been documented in inventories conducted at Sweeney Ridge (May & Associates, Inc. 2006). Small patches of the host plant *L. variicolor* for the mission blue butterfly can also be found at Rancho Corral de Tierra (URS Corporation 2010, Figure 6). Also in San Mateo County, 2,000 acres of habitat (on San Bruno Mountain, located outside the planning area) are being managed by the San Mateo County Department of Parks and Recreation. San Francisco's Twin Peaks population of mission blue butterfly was rediscovered in 2001. The City of San Francisco did a small mission blue butterfly reintroduction/population enhancement at Twin Peaks in 2009 by moving several gravid (pregnant) female mission blue butterflies to the site (SFRPD and USFWS 2009, 1).

In response to the butterfly's endangered status, GGNRA initiated a broad-scale habitat restoration program to remove French broom, pampas grass, and other targeted invasive plant species throughout mission blue butterfly habitat in the park during the late 1980s and early 1990s. Habitat restoration efforts for the butterfly have continued annually, consistent with recovery objectives for the species (NPS 2009c). Park stewardship programs in Marin County are also working to protect butterfly habitat adjacent to trails. Habitat restoration is ongoing at Milagra Ridge, where vegetation management involves removal of exotic species, including broom, pampas grass, and ice plant. At Fort Baker, where restoration has been ongoing since 1990, approximately 55 acres of mission blue butterfly habitat has been enhanced and restored to date.

The recovery plan for the San Bruno elfin and the mission blue butterflies calls for the protection of essential habitat for the mission blue butterfly, prevention of further degradation of habitat and recommends the enhancement of habitat when possible (USFWS 1984,4). The plan also recommends that land managers minimize use of herbicides, insecticides, and other toxic substances; control off-road vehicle activity; remove exotic weeds; transplant selected native flora; and improve seedling establishment of native flora. It also directs managers to restore or rehabilitate habitat in the butterfly's historical range (USFWS 1984, 48). Actions have been identified in the recovery plan that NPS can implement to help in the recovery of this species.

The population of mission blue butterfly in GGNRA has been monitored since 1994 at Marin Headlands and Fort Baker, since 1995 at Milagra Ridge, and since 2004 at Oakwood Valley/Alta Trail by a variety of methods. At Fort Baker, Battery Yates has mission blue butterfly habitat that is partially fenced (post-and-cable) but does not physically exclude dogs and Drown Fire Road is adjacent to mission blue butterfly habitat. The mission blue butterfly is known to occur along the Notch Trail at Sweeney Ridge and the host plants are known to occur in other areas at Sweeney Ridge (USFWS 1995, 3), including along Mori Ridge Trail, Sweeney Ridge Trail, the Baquiano Trail, the Sweeney Horse Trail, and the Sweeney Meadow Trail (May & Associates, Inc. 2006). Recent habitat surveys indicate that mission blue butterfly host plants are not present at Cattle Hill (NRM Environmental Consulting 2007, 2; URS Corporation 2010, Figure 6). At Milagra Ridge, the mission blue butterfly is known to occur at the site in an area referred to as the "Mission Blue Butterfly Corridor," located in portions of this site (NPS 2005c), including sections of the Milagra Ridge Road and Milagra Ridge Spur. There is no mapped mission blue butterfly habitat directly along the Alta Trail or Oakwood Valley Trail and Oakwood Valley Fire Road.

However, there is mapped mission blue butterfly habitat very nearby in the grassy hillsides between the two areas, where social trails have connected the trail and fire road. These social trails are closed, but are still used by both visitors and dogs. These grassy, west-facing hillsides adjacent to the Alta Trail (mapped mission blue butterfly habitat) are a favorite use area for commercial dog walkers. Mission blue butterfly presence and habitat exist along the North Miwok Trail corridor, where dogs are allowed on leash, and along a section of the Julian Road where voice control dog walking is allowed. NPS installed fencing in an attempt to discourage dogs and people from accessing mission blue butterfly habitat at the Alta Trail and along sections of the Coastal Fire Road/Trail in the Marin Headlands; however, the installed fencing is post and cable and does not exclude dogs from the habitat, especially if they are off leash. The park practice is to close trails through mission blue butterfly habitat to bikes, dogs, and horses, but allow dogs on leash on fire roads through mission blue butterfly habitat.

Tidewater Goby (*Eucyclogobius newberryi*)

The tidewater goby is listed as federally endangered. This species is a small benthic fish that occurs in California coastal lagoons with salinity less than 10 parts per thousand (USFWS 2005a, iii). While generally found in coastal embayments, gobies are also known to occur in streams. The tidewater goby is present in high densities in Rodeo Lagoon at GGNRA. The tidewater goby burrows in Rodeo Lagoon's soft shoreline sediment and completes its entire life cycle in the lagoon habitat. Males dig breeding burrows and then females aggressively spar with each other for access to males with burrows (Swenson 1995). The males care for the embryos for 9 to 11 days until they hatch, rarely if ever emerging from the burrows to feed (USFWS 2005a, 13). Because the fish do not enter the ocean, each population of the tidewater goby is isolated from the others (USFWS 2005a, 6). Various genetic markers demonstrate that pronounced differences in the genetic structure of tidewater gobies exist, and that tidewater gobies in some locations are genetically distinct (USFWS 2005a, 31); the population of tidewater gobies in Rodeo Lagoon is isolated from other populations and is genetically distinct (Dawson et al. 2001, 4). The lagoon is closed to both humans and dogs for overall resource protection. However, there is no physical barrier to prevent dogs from accessing the lagoon, specifically at the beach-lagoon shoreline. A concurrent NPS project includes the installation of a post-and-cable fence along the beach side of Rodeo Lagoon to discourage visitors from accessing the lagoon, although it would not physically exclude dogs or visitors from this area. Additionally, the voice control areas are located immediately adjacent to the shoreline of the lagoon. Pet citations have been issued as a result of dogs accessing closed areas (Rodeo Lagoon) at Rodeo Beach (appendix G).

A recovery plan for the tidewater goby, dated December 2005, is in effect. The recovery plan calls for protection and enhancement of currently occupied habitat, including managing freshwater inflow, exotic species, channelization, water quality, and human impacts; development of strategies to prevent further loss of habitat; and research and monitoring (USFWS 2005a, 43–45). The plan also names increasing public awareness and possible translocation of gobies as strategies to help populations recover (USFWS 2005a, 44–45). In January 2008, the USFWS published a Final Rule re-designating critical habitat for the tidewater goby to include additional sites throughout the range of the goby. Rodeo Lagoon was included in the revised designation of critical habitat for the tidewater goby and is described as critical habitat unit MAR-4 in the Final Rule. The Final Rule states that "tidewater gobies are abundant within Rodeo Lagoon, and the lagoon was occupied by tidewater gobies at the time of the listing and is currently occupied" (50 CFR Part 17).

Coho Salmon (*Oncorhynchus kisutch*)

The central California coast coho salmon evolutionarily significant unit is listed as federally endangered as well as state endangered (DFG 2004, ES.1). The evolutionarily significant unit includes all naturally spawned populations of coho salmon from Punta Gorda in northern California south to and including the

San Lorenzo River in central California, as well as populations in Redwood Creek at Muir Beach in GGNRA. This species occurs in several creeks in the planning area, as well as the nearshore waters of the Pacific Ocean and estuarine sites such as Bolinas Lagoon and the San Francisco Bay. A single cohort of coho salmon was found in Easkoot Creek (Marin County) (DFG 2004, 6.45). Designated critical habitat for coho in GGNRA includes some estuarine and stream areas in the coastal watersheds of Marin County, including Redwood Creek, that are accessible to coho salmon (64 FR 24053). The park has closed the Redwood Creek area to dogs, including the trail along Redwood Creek and at the creek crossing near Muir Beach. However, these closures are not always followed; a citation was issued for a dog in the creek in 2006 (appendix G).

Muir Beach
Credit: NPS

Coho salmon use Redwood Creek during many of their life stages (DFG 2004, 6.44). Coho salmon return to their home streams (Redwood Creek in the draft plan/EIS area) to spawn and lay eggs in nests called redds. Salmonids require gravel areas of substrate for laying eggs, and these areas are located upstream of the area where dogs can access Redwood Creek. When the eggs hatch, the young salmon are called alevins. Each alevin remains in the gravel and lives off its yolk sac until it is depleted. At this point, they are called fry and leave the gravel to feed on small prey in the stream; after 16 months, the young salmon are called smolts. Smolts migrate to the sea, remaining at sea until they return as adults to spawn in their home streams. A genetically distinct run of coho salmon are found in Redwood Creek (Marin County). The park monitors coho salmon annually and has begun a research and habitat restoration effort that is restoring streamside habitat at Redwood Creek and adding woody debris to enhance the in-stream habitat. In addition, the park has initiated the restoration of the Redwood Creek lagoon to help in restoring coho habitat near Muir Beach. Redwood Creek empties into the lagoon just upstream from the entrance channel of the creek at Muir Beach and ultimately enters the Pacific Ocean. Coho salmon have been declining in Redwood Creek in recent years (NPS 2008c, 2). Specifically, there were no spawning coho salmon observed in Redwood Creek during the 2007–2008 winter monitoring period, although a small number of coho fry were observed the next spring. While a portion of this recent decline can be attributed to a regional oceanic phenomenon, local conditions that have not yet been determined may also have been a factor (NPS 2008c, 2). A historical reference of coho salmon is recorded at a location on Denniston Creek at Rancho Corral de Tierra. The species has not been recorded at this site since 1941, and there are currently barriers to fish migration at the site (URS 2010, 3-2). As such, this species is not analyzed in chapter 4.

Steelhead Trout (*Oncorhynchus mykiss*)

The central California coast steelhead trout distinct population segment is listed as federally threatened. This species occurs in several creeks in the planning area. In the study area, steelhead trout occurs in Stinson Beach (Easkoot Creek), Muir Beach (Redwood Creek), Rodeo Beach (Rodeo Lagoon), the Marin Headlands Trails (Rodeo Creek and Gerbode Creek), and Rancho Corral de Tierra (Denniston and Martini Creeks) (Becker and Reining 2008). Designated critical habitat for central California coast

steelhead includes most of the coastal streams of Marin County, including Redwood Creek and Denniston Creek below Denniston Reservoir (NOAA 2005, 76). As stated above for coho salmon, the park has closed the Redwood Creek area to dogs, including the trail along Redwood Creek and at the creek crossing near Muir Beach. In addition, NPS has installed a post-and-cable fence along the beach side of lower Redwood Creek and lagoon to discourage visitors from accessing the water; however, the fence would not physically exclude dogs or visitors from the area, and voice control areas are located immediately adjacent to the shoreline of the lagoon. These closures have been violated, and pet violations have been recorded in the past (appendix G). Adult steelhead enter streams (including streams in GGNRA) in the late winter through spring to reach spawning sites. The amount of time steelhead rear in freshwater and marine/estuarine habitats is variable, ranging between 1 and 3 years. The park monitors steelhead and is conducting research and restoration efforts, particularly in Redwood Creek, as described above for coho salmon (NPS 2008c, 2). There is also a historic record of steelhead trout in San Vicente creek at Rancho Corral de Tierra (POST 2001, 35-36), but there is little current evidence to suggest that the creek currently supports steelhead (Becker and Reining 2008). Currently, physical blockages to the creeks at Rancho Corral de Tierra affect steelhead use of the site (POST 2001, 35-36).

California Red-legged Frog (*Rana draytonii*)

The California red-legged frog is listed as federally threatened. This species uses diverse habitat elements, including aquatic, riparian, and upland habitats (USFWS 2002, iv). Breeding sites of the California red-legged frog are located in a variety of aquatic habitats. Larvae, tadpoles, and metamorphs have been collected from streams, deep pools, backwaters in streams and creeks, ponds, marshes, sag ponds, dune ponds, and lagoons (USFWS 2002, iv). Numbers of California red-legged frogs have decreased dramatically in the urbanized San Francisco Bay Area, but populations persist at Marin County at Tennessee Valley (Tennessee Valley pond provides breeding habitat), Muir Beach (water bodies at site provide habitat but no known breeding occurs), Rodeo Beach (Rodeo Lake provides breeding habitat), as well as at Mori Point (ponds provide breeding habitat), Milagra Ridge (ponds provide breeding habitat), Sweeney Ridge/Cattle Hill. Cattle Hill has mapped occurrences of the California red-legged frog at the site, but neither Sweeney Ridge nor Cattle Hill has known breeding that has been documented to date (URS Corporation 2010, figure 3). However, both Sweeney Ridge and Cattle Hill provide potential breeding and nonbreeding habitat for the California red-legged frog based upon modeling efforts (URS Corporation 2010, figure 3). Although the California red-legged frog is normally associated with wetland areas and water bodies, studies have shown that riparian and upland habitats surrounding breeding ponds are equally as important for foraging (Bishop 2011). The USFWS designated critical habitat units for the California red-legged frog in 2001 and revised the units in 2006, 2008, and 2010 (USFWS 2010). For the California red-legged frog, critical habitat covers most of Sweeney Ridge and Rancho Corral de Tierra (USFWS 2010). In consultation with USFWS, the Milagra Ridge and Wolf Ridge site management plans include habitat enhancement for California red-legged frogs and the designation of several sites (Wolf Ridge, Rodeo Lagoon, and Redwood Creek) as special habitats with the objective of protecting habitat for the California red-legged frog and other species. Based on NPS winter breeding surveys, breeding populations of California red-legged frogs are present at Rancho Corral de Tierra at two known locations (NPS unpublished data). Occurrences of the frog are mapped in areas of Rancho Corral de Tierra, and the site provides ample dispersal and upland aestivation habitat. Existing trails at Rancho Corral de Tierra cross upland and dispersal habitat for this species (URS Corporation 2010, Figure 3). The California red-legged frog is the primary prey of the federally and state-endangered San Francisco garter snake (as discussed below). Colonization of this species had spread along the creek corridor and into the constructed wetlands and ponds at Muir Beach.

Cattle Hill
Credit: NPS

Current management of the California red-legged frog at GGNRA includes the placement of educational signs at Rodeo Lagoon, Rodeo Lake, and Mori Point. The NPS created four ponds at Mori Point to enhance the freshwater wetland habitat and to provide foraging habitat for the San Francisco garter snake, and these ponds also provide breeding and rearing habitat for the California red-legged frog. The pond habitat at Mori Point is currently fenced to reduce dog impacts. Current GGNRA regulations require on-leash dog walking at Mori Point, but some off-leash dogs have been observed at this site by park staff (see the "Visitor Use and Experience" section under "Visitor Use by Dog Owners"). The existing closure of Tennessee Valley to dog walkers (with the exception of the sections of the Coastal Trail that cross Tennessee Valley) may also benefit the California red-legged frog at GGNRA.

Western Pond Turtle (*Actinemys marmorata*)

The western pond turtle is currently under review for federal listing, although the IUCN conservation status is vulnerable (IUCN 2016, 1) and is listed as a species of conservation concern both federally and in the state of California. Although no western pond turtles have been introduced yet, and there have been no reported observations since the 1990s, their range once extended from western Washington and British Columbia to northern Baja California (USGS 1994, 1). Currently, this medium sized turtle has a disjunct distribution along the west coast. The western pond turtle utilizes ponds, lakes, streams, and river habitats occurring in both permanent and intermittent waters for foraging purposes. In addition to aquatic habitats, this turtle spends a significant amount of time nesting in upland terrestrial habitats (USDA 2005b, 15). Variability in time spent between habitats depends largely on the drying of ephemeral ponds, avoidance of strong currents, and cold weather conditions. Objects protruding from aquatic habitats such as logs or rocks provide ideal basking opportunities which are important for western pond turtles to maintain relatively constant body temperatures. Lack of basking sites may negatively impact the suitability of the habitat (USDA 2005b, 15). Currently, the greatest threat for the western pond turtle is habitat loss and fragmentation (USDA 2005b, 16).

Habitat assessments within the GGNRA concluded that Redwood Creek in the Muir Beach area, Rodeo Lake, and pond habitat at Mori Point are suitable for the western pond turtle. The pond habitat at Mori Point is currently fenced to reduce dog impacts. Current GGNRA regulations require on-leash dog walking at Mori Point, but some off-leash dogs have been observed at this site by park staff (see the "Visitor Use and Experience" section under "Visitor Use by Dog Owners"). Redwood Creek enters the GGNRA boundaries after traveling through a forested area within the Muir Beach community and passes under Pacific Way and into the lagoon near the Muir Beach Trailhead. Since the Western pond turtle has not been introduced or documented in the suitable habitats within the GGNRA, this species was not analyzed in the document.

San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*)

The San Francisco garter snake is listed as both federally and state endangered. The San Francisco garter snake is also a fully protected animal in California. Habitat requisites of the San Francisco garter snake include densely vegetated ponds near open hillsides where there are basking areas, cover, and food. Cattails, bulrushes, and spike rushes (*Juncus* spp. and *Eleocharis* spp.) are plant species preferred as cover by the snake (NPS n.d.a, 1–2). The San Francisco garter snake is normally associated with wetland

areas and water bodies, but also uses upland habitat for basking and/or burrowing (USFWS 1985, 9). Essential habitat for a breeding San Francisco garter snake population includes open, grassy uplands and shallow marshlands with adequate emergent vegetation; an open water component is also important to the San Francisco garter snake (USFWS 2006, 9-10). On the California coast, snakes hibernate during the winter, and adults may aestivate in rodent burrows during months when ponds dry. The primary food of the San Francisco garter snake is the California red-legged frog, but the snakes will also capture small bullfrogs (NPS n.d.a, 1). Young snakes depend primarily on Pacific tree frogs for food (USFWS 2007b, 2). The decline of the California red-legged frog (the adult snakes' primary prey) and the introduction of exotic predators such as bullfrogs into aquatic habitats are both threats to the San Francisco garter snake (USFWS 2002, 24). Habitat loss and the degradation of remaining habitat continue to be the primary threats to the recovery of the San Francisco garter snake (USFWS 2006, 15). Other threats include the increased presence of invasive species (such as bullfrogs mentioned above), water level fluctuations, vehicular strikes (USFWS 2006, 25) and since the Recovery Plan was established, the continued loss of grazing lands, the improper management of suitable habitat and the reduction in prey for the San Francisco garter snake (USFWS 2006, 30). Additionally, the San Francisco garter snake has historically been collected due to its rarity and beautiful coloration, and some amount of illegal collection likely still occurs (USFWS 2006, 20). In GGNRA, habitat for the San Francisco garter snake is found in San Mateo County. Specifically, the San Francisco garter snake has been documented as occurring at Mori Point and most of Mori Point contains habitat for the San Francisco garter snake. The NPS created four ponds at Mori Point to enhance the freshwater wetland habitat and provide breeding and rearing habitat for the California red-legged frog as well as providing foraging habitat for the San Francisco garter snake. NPS recorded San Francisco garter snakes using these constructed ponds at Mori Point as areas for foraging for California red-legged frogs (USFWS 2006, 6). Milagra Ridge has suitable aquatic, adjacent upland, and dispersal habitats for the San Francisco garter snake; other sites such as Sweeney Ridge may serve as dispersal habitat for the San Francisco garter snake. In addition, habitat assessments have concluded that Sweeney Ridge and Cattle Hill are important to the overall conservation of the San Francisco garter snake because these sites provide connectivity between known populations of the snake or between high quality aquatic habitats that potentially supports the snake (Swaim Biological 2006). However, with the exception of the South Meadow area of Sweeney Ridge, habitat quality for the San Francisco garter snake was rated low (Swaim Biological 2006). Several areas of the Rancho Corral de Tierra site provide suitable habitat for the San Francisco garter snake, where the California red-legged frog is present. There was a sighting of the San Francisco garter snake at Rancho Corral de Tierra in 1996 at the Denniston Reservoir (Swaim Biological 2007). There was also a mapped occurrence of the San Francisco garter snake at Denniston Creek near a trail in the Rancho site (URS Corporation 2010, Figure 11). Rancho Corral de Tierra provides suitable aquatic habitat and adjacent upland dispersal habitat are crossed by trails throughout Rancho Corral de Tierra (URS Corporation 2010, Figure 11).

Western Snowy Plover (*Charadrius alexandrinus nivosus*)

The western snowy plover is a subspecies found along the Pacific coast from Washington to Baja California, portions of the interior western and southwestern United States, the Gulf coast of Texas, and interior portions of Mexico (Page et al. 1995, 1). The population of western snowy plovers nesting within 50 miles of the Pacific Coast of North America from southern Washington to Baja California was declared as federally threatened by the USFWS in March 1993 (USFWS 2007a, 1). Therefore, the subspecies of western snowy plover that occurs along the shorelines of GGNRA is federally threatened. In September of 2005, the USFWS published a Final Rule to re-designate critical habitat for the western snowy plover along the coasts of California, Oregon, and Washington (50 CFR Part 17). The *Recovery Plan for the Pacific Coast Population of the Western Snowy Plover*, developed by the USFWS in 2007, indicates that monitoring and management of western snowy plover breeding, wintering, and migrating habitat (including reducing disturbance to this species) continue to be important steps for this species' recovery (USFWS 2007a, vi). In GGNRA, the western snowy plover uses areas with wide, sandy, dune-

backed beaches for roosting and foraging during the nonbreeding season. This species forages above and below the mean high waterline, typically gathering food from the surface of the sand, wrack line, or low foredune vegetation. There is no documentation of western snowy plovers nesting in GGNRA, but they overwinter at the Ocean Beach SPPA and at the Crissy Field WPA from July through May. There is a record from 1854 that a snowy plover (*Charadrius nivosus nivosus*) specimen was collected at the Presidio [in GGNRA] in early May (Grinnell 1932, 271-272), indicating that this bird was historically present on GGNRA beaches.

Western Snowy Plover Monitoring

NPS monitors snowy plovers at Ocean Beach and Crissy Field to determine changes in abundance and distribution, and to understand potential threats, including dogs, to plovers from recreational and maintenance activities (NPS 2008a, 1). Western snowy plover monitoring has been conducted at Ocean Beach using the same monitoring protocol since December 1994. This monitoring protocol was peer reviewed by an external panel through the NPS Inventory and Monitoring Program peer review process (Merkle et al. 2011, ii). The monitoring season runs from July through May and is referred to by the year of the July start; the winter season, from November through February, is the time period that best defines the western snowy plovers that consistently inhabit beaches during the nonbreeding season by removing the fall and spring migration periods when some of the plovers are moving through these areas.

In addition to presenting the average numbers of observed plovers in this section, maximum numbers for individual survey counts are presented as well to further describe plover use of the sites, since there are normally several months in the survey period when plover numbers are very low. The average number of plovers observed per survey during the winter was highest in the 1994 through 1995 survey period, at more than 54 plovers (with a maximum of 85 plovers), and was lowest in 1999, at less than 13 plovers (NPS 2008a). The winter population of western snowy plovers was on average above 30 plovers per winter survey in 2002 through 2006 (NPS 2008a). Maximum annual single survey counts of snowy plovers from 2000 through 2006 ranged from a low of 23 in 2000 to a high of 62 in 2003 (NPS 2006b, 8; Hatch et al. 2007a, 1; Hatch et al. 2007b). For the 2007 season (July 2007 through February 2008), the maximum number of snowy plovers counted on a survey was 49 (Hatch et al. 2008, 1). Western snowy plover numbers have still not matched those recorded in 1994 when a maximum of 85 snowy plovers and an average of 56 plovers were recorded (Hatch et al. 2007a, 8). The numbers of western snowy plovers vary year to year based on a variety of factors, including conditions on the breeding grounds, along migration corridors and at other wintering sites, beach width, the severity of storms, and other influences. Even though the western snowy plover distribution at Ocean Beach has fluctuated over time, the plovers have consistently concentrated in two primary areas of the beach at this site.

The NPS has been monitoring shorebirds at Crissy Field WPA since 2000, and records of western snowy plover pre-date the focused monitoring program there, which began in 2004 (NPS 2008a, 1). The western snowy plover monitoring protocol at Crissy Field was peer reviewed by an external panel through the NPS Inventory and Monitoring Program peer review process. Monitoring under this protocol started in 2006 using the same methods used at Ocean Beach. Two to eight western snowy plovers have overwintered in Crissy Field WPA annually since individuals were first observed there in January 2005. Additionally, wintering site fidelity was demonstrated by two color-banded individuals that were observed overwintering in the WPA in the 3 consecutive years from 2004 through 2006 (NPS 2008a, 2). Monitoring data indicate consistent western snowy plover use of the Crissy Field WPA, although this population is relatively small in size.

Presence and Impacts of Dogs on Western Snowy Plover

Ocean Beach
Credit: NPS

As stated previously, 36 CFR 7.97(d) describes the seasonal dog walking leash restrictions for the western snowy plover at the Ocean Beach SPPA and at Crissy Field WPA. Off-leash dogs are brought into the Crissy Field WPA and the Ocean Beach SPPA by park visitors during the seasonal leash restriction. The law enforcement incident reports from 2008 through 2011 showed that Ocean Beach has the most incidents, with a total of 815 recorded dog-related incidents associated with natural resources. The majority of the incidents reported were for having a dog off leash within the Ocean Beach SPPA (729 recorded incidents, table 7a) during the period (July 1 through May 15) when dogs must be leashed. Also from 2008 through 2011, Crissy Field had the second most incidents, with a total of 358 recorded dog-related incidents associated with natural resources. The most common incident at Crissy Field was for having off-leash pets within the WPA (283 reported incidents, table 7a) during the period (July 1 through May 15) when dogs must be leashed.

The western snowy plover monitoring program at GGNRA has focused on summarizing snowy plover distribution and relative abundance in the SPPA at Ocean Beach and the WPA at Crissy Field, as well as summarizing numbers and trends for people and dog use (Hatch et al. 2007b, 1). At GGNRA, there have been multiple instances of dogs flushing or chasing shorebirds, including western snowy plovers (Hatch 1996, ii; Hatch et al. 2007a, 4). As described in the collected law enforcement data previously and through the plover monitoring program, the seasonal leash restrictions designed to protect western snowy plovers at Ocean Beach are frequently violated and disturbance of shorebirds, including western snowy plovers by dogs and people has occurred (Hatch 1996; Hatch et al. 2007a, 2008; USFWS 2007a). During western snowy plover monitoring surveys conducted at Ocean Beach from December 1994 to May 1996, 362 dogs were observed chasing birds; 19 dogs were observed chasing at least 62 western snowy plovers; and roaming dogs inadvertently disturbed at least 100 additional western snowy plovers (Hatch 1996). During a long-term monitoring survey conducted from 1994 to 2006, 48 off-leash dogs were observed chasing western snowy plovers (Ward and Ablog 2006).

Similar to Ocean Beach, dogs have specifically been documented disturbing western snowy plovers at the Crissy Field WPA, although these numbers likely undercount disturbances. In June through July 2006, there were two observed instances of dogs chasing birds within the Crissy Field WPA (Hatch et al. 2007a, 14) and during the September 2006 through April 2007 surveys, there were three observations of dogs chasing shorebirds within the Crissy Field WPA (Hatch et al. 2007b, 5). There were no observations of dogs chasing shorebirds or plovers during the July 2007 through February 2008 surveys within the Crissy Field WPA (Hatch et al. 2008, 3). Western snowy plovers infrequently use the habitat at Central Beach (including the tidal inlet from Crissy Marsh), where there are no leash restrictions, although this area is not as wide and the beach characteristics may not provide the same quality of snowy plover or shorebird habitat as the WPA.

The primary objectives of the snowy plover monitoring program are to determine trends in population size and spatial distribution of snowy plovers at the Crissy Field WPA and the Ocean Beach SPPA (Merkle et al. 2011, xi). However, the monitoring program also has management objectives to reduce human-caused disturbance to wintering plovers. In support of these objectives, data on the number and

distribution of people and dogs, compliance rates with seasonal restrictions requiring pets to be on leash, and instances of dogs chasing snowy plovers and shorebirds is collected at Ocean Beach and Crissy Field. Because the monitoring program is designed to census snowy plovers and determine where they are on the beach, there are data limitations and limits to analyses of these surveys that may result in underestimating rates of dogs disturbing western snowy plovers. One limitation of the survey is that low numbers of observational hours were used to draw conclusions. Also, using encounter rates (number of dogs encountered per hour) to measure the rate of disturbance may be unsuitable because it is a challenge to obtain encounter rates from observations made along a transect moving in one direction. The low numbers of observational hours and the use of encounter rates in western snowy plover monitoring may underestimate instances of dogs disturbing western snowy plovers. Also, using median or average values to describe disturbance rates may not be useful in assessing disturbance at the sites. For example, averaging the number of dogs per hour observed chasing shorebirds (Hatch et al. 2007a, 10) obscures the fact that no or few disturbances have been averaged with great or high disturbances. Because of the sensitive nature of western snowy plovers, even small numbers of disturbances can greatly affect this shorebird and this fact may be further obscured by averaging the data.

Below, are samples of some recent excerpts from 2009 and 2010 incident records from law enforcement. These quotes describe the issues and provide specific examples of dogs disturbing western snowy plovers in the Crissy Field WPA and the Ocean Beach SPPA. Additional quotes and examples of dogs disturbing other natural resources at GGNRA sites are included at the beginning of this chapter.

- "I observed two medium sized brown dogs running unleashed throughout the Snowy Plover Protection area. I observed the dogs for at least five minutes run-at-large as they ran southward in my direction. One of the dogs ran well over one-hundred feet away from the owner who was jogging along the shore, I observed the dog chase several resting shorebirds as well as run directly through and disturb a small colony of resting Snowy Plovers." (Ocean Beach, January 28, 2010, Incident Report # 09-981)
- "I was dispatched to the Crissy Field Wildlife Protection Area (WPA) for a dog off leash. Furtado is a snowy plover monitor who reported to dispatch that a man was jogging with a group of kids and a dog off leash when they ran directly over the area were two snowy plovers were resting on the beach, and the plovers flew off." (Crissy Field Wildlife Protection Area, October 21, 2009, Incident Report # 09-011750)
- "While patrolling Ocean Beach I observed a dog (Labrador type) off leash on Ocean Beach north of Sloat Blvd, and south of Stairwell 21 in violation of numerous clearly visible posted signs stating Snowy Plover Wild Protection Area — Leash Pets… I watched the dog chasing a small flock of Snowy Plovers from 1350 hours until 1411 hours. The dog would charge into the flock of Plovers and cause them to take flight and then chase them as they flew above the beach and charge into them again when they landed. This went on unabated for 21 minutes (timed by my wristwatch). Nobody was near the dog and nobody attempted to stop the dog. I attempted to call the dog and stop the dog, but it would not heed my voice commands." (Ocean Beach, January 29, 2009, Incident Report # 09-001038)

Regulatory Actions and Current Status of Western Snowy Plover

In 2004, the decision in *U.S. vs. Barley* (405 F.Supp.2d 1121 (N.D. Cal. 2005)) allowed off-leash dogs in certain areas of the park. Monitoring data indicate that disturbance of western snowy plovers due to off-leash dogs increased in both the Crissy Field WPA and the Ocean Beach SPPA following the *U.S. v. Barley* decision (NPS 2006e; NPS 2008a, 2). After the seasonal leash requirement was put in place at Ocean Beach in November 2006, the median number of dogs per hour decreased, as did the percentage of off-leash dogs; for the entire 2006 season, the median percentage of off-leash dogs at Ocean Beach was

64 percent (NPS 2008a, 2). Results of monitoring from the Crissy Field WPA also indicated an upward trend in dog use after the *U.S. vs. Barley* decision, and increases in the number of off-leash dogs and incidence of dogs chasing snowy plovers and other shorebirds (NPS 2008a, 2).

In November 2006 and July 2007, GGNRA adopted emergency regulatory provisions under 36 CFR 1.5, requiring on-leash dog walking when plovers are present (July 1 through May 15) in the Crissy Field WPA and Ocean Beach SPPA, and signs stating the seasonal restrictions were posted. A final seasonal protection rule, as detailed in the GGNRA Compendium (NPS 2009e, 31), was published on September 19, 2008. However, despite education and enforcement efforts, current compliance with the 2008 seasonal protection rule remains low. The NPS recently (January 2010) installed new fencing, gates, and signage at the eastern boundary of the WPA at Crissy Field to better demarcate where dog walking restrictions start; gates and signage were also installed at trail entry points to the WPA.

Bank Swallow (*Riparia riparia*)

The bank swallow is listed as state threatened. A recovery plan for the bank swallow has been developed by the State of California (DFG 1992, 1) and a conservation plan has been developed by Partners in Flight (Garrison 2004, 1). The bank swallow nests in burrows and holes in bluffs and cliffs. Channelization and stabilization of banks of nesting rivers, as well as other destruction and disturbance of nesting areas, have caused a decline of the species (DFG 1992, ii). The bluffs just below and to the north of Fort Funston are one of only two coastal cliff breeding sites for the bank swallow in coastal California (Chow 1996, 1; NPS 2007c, 1). The bank swallows dig holes in the bluffs, which may be as much as 200 feet above sea level along the beach at Fort Funston. These bluffs consist of layers of sandstone, mudstones, and conglomerates and are known as the Merced and Colma formations. These formations are described as soft, easily erodible, sedimentary rocks and are very susceptible to disturbance.

The bank swallow colony at Fort Funston has been observed since at least 1905 (NPS 2007c, 3), has been documented at Fort Funston by California Department of Fish and Game since 1956 (DFG 1992, 20), and has been monitored since 1993 by NPS (Chow 1996, 1; NPS 2007c, 1). The bank swallow colony at Fort Funston runs from the north end of the beach (near the Great Highway across from the Oceanside Water Pollution Control Plant) to Panama Point, a rocky outcrop north of the main sand ladder (NPS 2007c, 2). The total number of bank swallow burrows observed at the site from 1993 to 2006 through the NPS monitoring program has ranged from a high of 924 burrows in 1994 (Chow 1996, 2) to a low of 140 burrows observed in 1998 (NPS 2007c, 3). The number of burrows was high for the years 1993 through 1996, with total counts above 500 burrows (NPS 2007c, 3). Storm events associated with El Nino conditions during the winter of 1997 into 1998 wiped out all the burrows through heavy erosion at the site (NPS 2007c, 3). The cliffs are subject to rapid erosion from storm events outside the breeding season (NPS 2007c, 1). This erosion removes burrows from the previous season. The bank swallows respond by digging new burrows in the soft cliffs each year. Years without large storm events often result in burrows remaining from previous years, and these are recounted in the monitoring, although these burrows are not always active with swallows. From 2000 through 2006, the number of burrows ranged from 142 in 2001 to a high of 255 in 2004 (NPS 2007c, 3). Approximately 40 to 60 percent of burrows are actively used for nesting in a given year based on burrow occupancy estimates for bank swallows in the western United States, including data for California and Fort Funston (Laymon et al. 1987, 25; DFG 1995, 4; Garrison 1999, 19-21). Records and monitoring indicate that the bank swallow colony at Fort Funston has always been fairly small (Etchell 2010, 2-3), the number of burrows varies each year, and bank swallows have shifted locations along the cliffs at Fort Funston over time (NPS 2007c, 3; Etchell 2010, 2-3). Bank swallows are present at Fort Funston during their nesting season (April 1 to August 15) and spend the nonbreeding season in South America (Garrison 2004, 1). A seasonal advisory is in effect that informs visitors of the potential presence of bank swallows and advises avoiding accessing the bluffs from above and 50 feet out from the bluff face during the bank swallow nesting season (NPS 2001, 6). Other closures

at Fort Funston include the north end of the Sunset Trail due to erosion and a 12-acre Habitat Protection Area. The 12-acre fenced Habitat Protection Area was closed to protect bank swallows, protect geologic resources, provide visitor safety, and allow habitat restoration (NPS 2001). The nesting colony is currently monitored about once per week by park personnel. Visitors can access areas surrounding the bluffs from above the beach in the area around the Funston Beach Trail, north at the junction with the Sunset Trail. Signage and fencing (currently mostly buried) have been installed along the trails adjacent to the closure area, and signs along the beach below the colony request that visitors voluntarily comply with restricted access to the northern section of the bluffs when the swallows are nesting. Fort Funston has high visitor use, and in 2007–2008 there were two pet citations, warnings, and reports taken related to wildlife disturbance at the site (appendix G).

Northern Spotted Owl (*Strix occidentalis caurina*)

The northern spotted owl, a subspecies of the spotted owl, is listed as federally threatened and was originally listed by USFWS due to the widespread loss of suitable habitat across the owl's range and the inadequacy of existing regulatory mechanisms to conserve the owl (USFWS 2011a, vi). Northern spotted owls occur in coniferous and evergreen hardwood forests on GGNRA lands north of the Golden Gate, most notably at Muir Woods National Monument (which is closed to dogs), Homestead Valley, Oakwood Valley, and Marin Headlands Trails (Coyote Creek Drainage). A potential predator of northern spotted owls, great horned owls, have been detected in and around the area in recent years; their presence may preclude northern spotted owls from using the area. Marin County, at the southern limit of the subspecies' range, supports relatively high densities of this owl in appropriate habitat (NPS 2011c). The local population is considered healthy and is protected by the large expanse of public lands in Marin County. Additionally, NPS works with other land managers and the county to monitor and actively protect northern spotted owls and habitat, including providing information to Marin County planners. The dusky-footed woodrat is the primary prey for northern spotted owls (Hamm et al. 2007, 1). Therefore, any changes in the abundance and/or distribution of the dusky-footed woodrat could indirectly affect the northern spotted owl. The revised final recovery plan for the northern spotted owl developed in 2011 by the USFWS stated that competition from the barred owl poses a complex threat to the northern spotted owl as the barred owl expands its territory to the western states (USFWS 2011a, vii). The recovery plan recommends barred owl removal experiments to assess the best path to recovery for the northern spotted owl (USFWS 2011a, Recovery Action 29). Barred owls currently occur in Marin County and pose a new threat to the northern spotted owl population in Marin County (NPS 2011c). The recovery plan was revised in 2011, which stated that many populations of spotted owls continue to decline, even with extensive maintenance and restoration of spotted owl habitat in recent years (USFWS 2011a, vi). The revised recovery plan continues to list barred owl management as the third of four steps in the recovery strategy (USFWS 2011a, vii). In addition to describing specific actions to address the barred owl threat, the revised recovery plan describes the importance of maintaining and restoring high value habitat for the recovery and long-term survival of the spotted owl (USFWS 2011a, vii). NPS management focuses on protecting northern spotted owl habitat and reducing disturbance (including from dogs) to the greatest extent possible to ensure their long-term survival. The calls of territorial northern spotted owls have been described as sounding like dog barks, and these territorial northern spotted owls may respond to barking dogs. Young northern spotted owls that have recently fledged are sometimes found on the ground, where they are susceptible to dogs, especially those dogs that are off leash. There have been a few cases reported of dogs discovering young northern spotted owls on the ground or alerting owners to the presence of owls on the ground.

Guadalupe Fur Seal (*Arctocephalus townsendi*)

The Guadalupe fur seal is listed as both federally and state threatened. This seal breeds along the eastern coast of Guadalupe Island, approximately 200 kilometers west of Baja California. However, individuals

have been sighted in the Southern California Channel Islands, including two males who established territories on San Nicolas Island. This species is an occasional vagrant from offshore marine habitat. In the park sites, the Guadalupe fur seal is primarily at risk from dogs if found stranded on beaches that allow dogs. The twelve years of data (from 2000 through 2011) collected by the Marine Mammal Center indicate there were six strandings of Guadalupe fur seals at GGNRA: two at Stinson Beach, one at Rodeo Beach, two at Ocean Beach, and one at Fort Funston (MMC 2012a; table 9). Due to the extremely low numbers of Guadalupe fur seal strandings that have occurred at GGNRA over the past twelve years, a detailed impact analysis of this species is not necessary for this project, but a general discussion of impacts to hauled-out or stranded pinnipeds is included in the "Wildlife" section of chapter 4 for each applicable site at GGNRA.

Steller Sea Lion (*Eumetopias jubatus*)

The Steller sea lion is listed as federally threatened. This sea lion breeds from the northern Channel Islands north to the Aleutians and Pribilofs, and a breeding colony exists on Año Nuevo Island, Santa Cruz County, approximately 50 miles south of San Francisco and GGNRA. A historical haul-out was also located at Seal Rock, near the Lands End site. This species is an occasional vagrant from offshore marine habitat. Critical habitat for the sea lion in the vicinity of San Francisco is designated for both Año Nuevo Island (a state reserve) and Southeast Farallon Island in the Farallon National Wildlife Refuge, both located in the Pacific Ocean approximately 55 miles to the south and 30 miles to the northwest of San Francisco; no critical habitat is mapped at GGNRA. From twelve years of collected data by Marine Mammal Center (2000 through 2011), there were no strandings of Steller sea lions at GGNRA (MMC 2012a). Therefore, a detailed impact analysis of this species is not necessary for this project, but a general discussion of impacts to hauled-out or stranded pinnipeds is included in the "Wildlife" section of chapter 4 for each applicable site at GGNRA.

THREATENED, ENDANGERED, AND CANDIDATE SPECIES: PLANTS

Marsh Sandwort (*Arenaria paludicola*)

Arenaria paludicola is a federally endangered plant that grows in wetland and riparian ecosystems. It is a small perennial forb in the pink family. It was once found along much of the west coast of the United States, but there are now only approximately a dozen wild individuals, all in San Luis Obispo County. Management of this species is guided by the Recovery Plan for Marsh Sandwort (*Arenaria paludicola*) and Gambel's Watercress (*Rorippa gambelii*) (USFWS 1998b). The recovery plan identifies establishing new populations as an important recovery action for this species. One of the historic populations of this species, recorded by early botanists, was from Fort Point, just south of the Golden Gate Bridge in San Francisco. The site is now part of Golden Gate National Recreation Area, but the marsh sandwort found there in the early 1900s are no longer there. Because of this history, the GGNRA was identified as a promising introduction site for a new population. In December of 2011, two new populations (over 800 individuals) were established in the Marin Headlands near the Rodeo Beach overflow parking lot and along the Miwok Trail in Rodeo Valley. Monitoring results as of July 2012 indicate that over half of these individuals are still surviving (Acierto et al. 2012).

Franciscan Manzanita (*Arctostaphylos franciscana*)

Franciscan manzanita is a federally endangered serpentine chaparral shrub. It is also perennial and prostrate and likely grew in close association with the Raven's manzanita. This species was presumed extinct in the wild for over 60 years, until a single individual was discovered on a serpentine road cut in the Presidio of San Francisco in 2009. This individual was transplanted to Presidio Area B (Chassé et al. 2009). The Franciscan manzanita was listed as federally endangered in 2012 and critical habitat has been proposed. Proposed critical habitat areas include three units in the Presidio Area A: Fort Point, Fort Point Rock, and the World War (WW) II Memorial. The Fort Point unit includes 12 acres near Fort Point east of the Golden Gate Bridge and north of Doyle Drive along Long Avenue and Marine Drive. The Fort Point Rock unit consists of 36 acres west of the Golden Gate Bridge and west of Lincoln Boulevard from the toll plaza south to Kobbe Avenue. The WW II Memorial unit includes 3 acres in two subunits. Subunit 3A is west of Lincoln Boulevard at the intersection of Lincoln Boulevard and Kobbe Avenue. Subunit 3B is in Presidio Area B (USFWS 2012). The NPS is currently working with the Presidio Trust and the USFWS to identify suitable locations within the proposed critical habitat to plant clones of the single wild Franciscan manzanita individuals.

Presidio (Raven's) Manzanita (*Arctostaphylos hookeri* ssp. *ravenii*)

Presidio manzanita is listed as federally and state endangered and is a perennial, prostrate to low-growing, shrub. It exists as a single individual east of Lincoln Boulevard (in Area B) of the Presidio on a serpentine outcrop (USFWS 1984). As part of restoration efforts to reintroduce this species at GGNRA, clones of this individual have been planted west of Lincoln Boulevard, near Baker Beach, in suitable serpentine coastal prairie habitat. The Presidio manzanita is a self-fertile plant, which means the plants can pollinate themselves and produce viable offspring. The management of this species is guided by the *Recovery Plan for Coastal Plants of the Northern San Francisco Peninsula* (USFWS 2003, 63-64), which suggests that the species is stress tolerant with sparse competing vegetation, but is relatively intolerant of direct vegetative competition such as shading from shrub or tree canopies. There have been no reports of natural seedling or clone establishment around the remnant wild Presidio manzanita, which may indicate a lack of viable seed, seed predation, or lack of sufficient seedling microsites. The Trust has removed non-native vegetation around the single clone and has installed fencing and interpretive signs.

Presidio Clarkia (*Clarkia franciscana*)

The Presidio clarkia (*Clarkia franciscana*) is a federally endangered herbaceous annual plant. The habitat of Presidio clarkia is generally described as being composed of serpentine soils, and is around 50 meters in elevation (Jepson Interchange 2013). This species occurs in coastal scrub, valley grassland, and foothill grassland plant communities (CNPS 2013). This plant is endemic to California, where it is restricted to San Francisco and Alameda counties, and is known from fewer than five occurrences (CNPS 2013). There are two populations of this species in and adjacent to GGNRA lands. One population is located outside of GGNRA at the WW II Memorial east of Lincoln Blvd in Area B of the Presidio. The second population is located at the Presidio Coastal Bluffs at the Baker Beach site along the Coastal Trail, near Battery Boutelle and south of the Golden Gate Bridge.

Marin dwarf-flax (*Hesperolinon congestum*)

Baker Beach
Credit: NPS

Marin dwarf-flax (or Marin western flax) is listed as federally and state threatened and is a small herbaceous annual of the flax family with slender threadlike stems. This species is included in the September 1998 Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area (USFWS 1998a, iv) and the management of this species is also guided by the *Recovery Plan for the Coastal Plants of the Northern San Francisco Peninsula* (USFWS 2003, iii). It is found in GGNRA as a small population west of Lincoln Boulevard of the Presidio. It grows in the serpentine chaparral (coastal prairie-grassland) habitat and is exclusive to serpentine or other bedrock outcrops (USFWS 2003, 20). At GGNRA, Marin dwarf-flax occurs in serpentine grassland soil outcrops above Baker Beach, near the one remaining natural Presidio manzanita location (USFWS 2003, 65). Of the 11 locations in Marin County where Marin dwarf-flax currently resides, 2 are in GGNRA: the Presidio and Baker Beach (USFWS 2003, 89; 1998a, II-98). However, Baker Beach is the only GGNRA site where the Marin dwarf-flax occurs that is considered in this final plan/EIS. The species is threatened by residential and recreational development as well as by competition with non-native, invasive species. Population trend monitoring of GGNRA populations and adjacent populations indicates stable to increasing numbers in the area, although trends are difficult to interpret due to fluctuating annual population sizes typical for annual species. Results from other areas, not under direct management of the NPS, suggest that overall impacts on the species are from non-native and native plant species encroachment, particularly by shrubs. These species encroach on suitable habitat and limit the annual display of this species (USFWS 2003, 89). It has also been suggested that the occurrence of this species may also be threatened by trampling when people and dogs walk off of established trails (Buxton 1998). Current efforts to restore Marin dwarf-flax are underway in the Presidio, where NPS biologists will be attempting to experimentally establish new populations.

San Francisco Lessingia (*Lessingia germanorum*)

San Francisco lessingia is listed as federally endangered and state endangered and is a low-growing, slender-stemmed annual herb of the sunflower family (Asteraceae). Populations of this species occur primarily in small, local remnants of dune scrub in the Presidio. Dune scrub is found on the sand terrace slopes above Baker Beach and in the Lobos Creek Dunes, and San Francisco lessingia is found in association with this community at Baker Beach. Both Fort Funston and Baker Beach have been designated as San Francisco lessingia recovery and enhancement sites (USFWS 2003, 128, 141). Although dune scrub habitat occurs at Fort Funston, the San Francisco lessingia does not currently occur there. Reintroduction of the species is precluded by the current unmanaged (or unrestricted) dog use at Fort Funston. In the Baker Beach site, there are areas designated for further study and potential recovery of the San Francisco lessingia (NPS and Presidio Trust 2001, Chap. 3, 3). Additionally, at Baker Beach, a dunes site at Lobos Creek is an area of early-succession stable dune scrub that was recently (1995 to 1997) restored as a mitigation effort (USFWS 2003, 29). The San Francisco lessingia prefers sparse, relatively open native dune scrub, coastal scrub, and grassland vegetation and specific substrates described as old coastal sand deposits (USFWS 2003, iii). Historical populations were probably associated with early stages of succession following natural dune blowouts (hollows derived from wind erosion of dunes) or other local disturbances in coastal dune scrub (USFWS 2003, 38). The San Francisco

lessingia is now narrowly associated with either sparse vegetative cover or substantial vegetation gaps, usually related to past disturbance of the substrate or the vegetation. The management of this species is guided by the *Recovery Plan for the Coastal Plants of the Northern San Francisco Peninsula* (USFWS 2003, iii), which indicates that primary impacts on this species are related to the edge effects of adjacent vegetation, including shading, non-native plants, and wind blockage. This plan suggests that primary protection and recovery actions should focus on removing non-native plant species, minimizing edge effects, and increasing or enhancing suitable habitat around the population and can be implemented by NPS to help in the recovery of this species.

Hickman's Potentilla (*Potentilla hickmanii)*

Hickman's potentilla (Hickman's cinquefoil) is listed as federally and state endangered. This species is a perennial herb that is endemic to California (CNPS 2009, 1). At Rancho Corral de Tierra, Hickman's potentilla is found primarily in coastal grasslands. This species is seriously threatened by urbanization, recreational activities, non-native grasses, and grazing (CNPS 2009, 2). Suitable habitat to support Hickman's potentilla occurs at Mori Point (URS Corporation 2010, figure 19), but there are no mapped occurrences of this plant presently. There are several known occurrences of Hickman's potentilla at Rancho Corral de Tierra in the Montara Area, but most of the populations are located away from areas with heavy foot or vehicle traffic. However, there are two populations that are crossed by or are adjacent to current trails that experience regular use (POST 2001, 28). In addition, potential habitat is located throughout the Rancho site (URS Corporation 2010, Figure 19).

CULTURAL RESOURCES

Cultural resources are material manifestations of past human activities. They include prehistoric and historic structures, objects, landscapes, etc. Of the many cultural resources in the park, the only ones that have been analyzed for this final plan/EIS are those believed eligible for or listed on the National Register of Historic Places (NRHP) and that are resources composed of or including features that are earthen and vegetative, which are considered vulnerable to impacts from visitors with dogs.

Erosion and ground disturbance are primary factors in the loss of integrity of cultural resources.

Erosion and ground disturbance are primary factors in the loss of integrity of cultural resources. The loss of integrity can be caused by natural forces (wind, rain, seismic activity, soil instability, burrowing animals) as well as human factors (park visitors, dogs—trampling, digging). The presence of humans and their dogs, both on and off trail, is believed to increase natural erosion processes, furthering the potential to negatively affect cultural resources in GGNRA (e.g., seacoast fortifications and their integral earthworks, field fortifications, archeological resources). In addition, some cultural resources are affected by dog urination (e.g., detrimental effects to character-defining features, such as vegetation, associated with historic districts and structures).

AREA OF POTENTIAL EFFECTS

The area of potential effects (APE) is defined by the *National Historic Preservation Act* (NHPA) Section 106 regulations as the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties" (36 CFR 800.16(d)). Historic properties are those cultural resources listed in or considered eligible for inclusion on the NRHP. In this case, the APE is defined primarily by national historic district and landmark boundaries, as well as a few individual resource areas where smaller, general boundaries are used. These cultural resource boundaries do not readily conform to defined geographic areas as are used in the analysis of other resource topics and, consequently, this section is structured differently than others.

The APE was determined prior to resource analysis and includes multiple areas in both Marin and San Francisco counties (map 25, Marin County sites, and map 26, San Francisco County sites). Boundaries of these areas were established based on the occurrence of cultural resources within areas for which dog management actions have been proposed.

Many of the individual resources that may be affected by the plan are encompassed within larger district or landmark designations: Forts Baker, Barry, and Cronkhite Historic District; the Presidio of San Francisco National Historic Landmark (NHL) (Presidio NHL); Fort Mason Historic District; and the Fort Miley Military Reservation. While the APE encompasses these larger historic district boundaries, the potential effects of the dog management plan are more limited to discrete elements of these districts (historic structures, etc.), as identified below.

The general boundaries of the Forts Baker, Barry, and Cronkhite Historic District include uplands and tidelands in southern Marin County, extending west from the north side of the Golden Gate along the Pacific Ocean coastline and east to the San Francisco Bay. The general boundaries of the Presidio NHL include a large area from Crissy Airfield (San Francisco Bay) west to the Pacific Ocean. The Fort Mason Historic District is located just east of the Presidio NHL, along San Francisco Bay. Fort Miley Military Reservation is located on Point Lobos bordered by Clement Street and Lincoln between 40th Avenue and 48th Avenue.

In addition, smaller areas containing cultural resources that have the potential to be affected by the plan are included in the defined APE. These include general locations of archeological resources at Muir Beach and Point Lobos, as well as Battery Davis at Fort Funston and the U.S. Coast Guard Station Historic District, which is a 5-acre district containing historic structures that contribute to Presidio NHL. While listed on the NRHP, the Montara Light Station in San Mateo County near Rancho Corral de Tierra is found outside of the APE for this final plan/EIS and is therefore not analyzed further.

CULTURAL RESOURCE CONTEXT

Pre-Contact Context

Native American population densities in California were among the highest in all of North America. Evidence of Native American use of the general area dates back approximately 10,000 years. At the time of Native Americans' first contact with European and Mexican visitors, the lands around San Francisco Bay were occupied by numerous small tribes that, as a result of linguistic similarities, are described as belonging to two major linguistic areas: the Coast Miwok (approximately 15 tribes north of the Golden Gate) and the Ohlone (approximately 50 tribes south of the Golden Gate). These tribes were organized into small, politically independent groups, living in small villages associated with coastal and marshland areas. Groups were often organized by watershed areas, which could result in a single group defining its territory by one or more watersheds. Subsistence activities were based on annual group movements—seasonal rounds of hunting, fishing, and gathering—between temporary and permanent village sites (NPS 2008d, 1).

Early European and Mexican visitors to the area noted a variety of resources included in the native inhabitants' diet—crabs, birds, deer, nuts, herbs, and fruits. Villages contained a variety of structures of vegetation, earth, and supporting pole construction used for a variety of functions, including dwelling, assembly, ceremony, sweathouses, food processing and storage, etc. With a subsistence strategy tied to the ocean and bay, villages were typically located along the coastlines, and numerous prehistoric shellmounds and other artifacts have been identified in these areas (Toogood 1980). Coast Miwoks and Ohlones are believed to have engaged in periodic burning of the landscape to promote the growth of desirable native vegetation species for seed gathering, to drive game animals for harvest, and to create

forage for hunting prey (deer, elk) (NPS 2008d, 1). The park's oldest indigenous archeological site consists of shell material found at Lands End, dating to AD 150 (NPS 2008d, 1).

The Spanish settlement of the area in the late 18th century resulted in dramatic cultural and organizational changes for the indigenous people of the San Francisco Bay Area. Ultimately, these changes resulted in the devastation of the native cultures through introduced diseases, forced labor, and disruption of family and social structures (NPS 2008d, 2). Despite the devastation, the Coast Miwoks and Ohlones survived.

Historical Context

In the late 18th century, Spanish military and civilian settlers began establishing their military, religious, and civilian presence in the area. As a part of this settlement of the San Francisco Bay Area, activities such as cattle grazing, dairy farming, timber harvesting, and other agricultural pursuits were introduced throughout the 19th century, particularly north of the Golden Gate (NPS 2009c, 123–126). The San Francisco Bay developed into one of the most important harbors on the Pacific Coast during the 19th century, serving as an outlet for products from approximately 70 percent of California by 1927 (Toogood 1980).

The beginnings of military defenses in the area began in 1776 with the establishment of the Spanish Presidio, which was intended to protect the claim of the Spanish crown to the northernmost permanent outpost of its empire on the Pacific. During the approximately 230 years since the Presidio was established, numerous fortifications have been built along the San Francisco coastline by the governments of Spain (1776–1822), Mexico (1822–1846), and the United States (1846–1974). Fortifications constructed by the United States include those designed to ensure coastal and harbor defense during the Civil War, the Spanish-American War, WW I, WW II, and the Cold War, making this coastline one of the best defended on the West Coast (Freeman et al. 1999).

CULTURAL RESOURCE TYPES

The NPS recognizes five categories of cultural resources for management purposes: archeological resources, historic structures, cultural landscapes, ethnographic resources, and museum objects (NPS 1998). It is not expected that ethnographic resources or museum collections will be affected by this final plan/EIS and they are not included in this analysis. Appendix I is a list of cultural resources included in this analysis.

Archeological Resources

Archeological resources are the remains of past human activity and the records documenting the scientific analysis of these remains. They are often buried but may extend aboveground. They are commonly associated with native peoples but can also be products of more contemporary society (NPS 1998). Archeological sites are considered fragile, nonrenewable resources. While field fortifications (military earthwork features, such as foxholes and trenches) feature some characteristics of archeological sites, they are addressed as features of cultural landscapes for this analysis.

The three archeological resources addressed in this final plan/EIS are indigenous in nature and are either listed on or considered eligible for the NRHP. The Marin County site (CA-MRN-333) is located in the general Muir Beach/lagoon area. The site is a relatively intact pre-contact shell midden, which was listed on the NRHP in 1979 (NPS 2008e).

The San Francisco County sites (CA-SFR-5 and CA-SFR-21) are located in the general area of Point Lobos and were listed in the NRHP in 1976. They are described as containing, among other items,

"mammalian and fish bones, chert and obsidian flakes, a bead and stone fishing weight, and a prehistoric hearth of fire-cracked rocks" (NPS 2005d, 30). Both have been stabilized with native vegetation; site CA-SFR-5 is fenced, but not in a way that precludes entry into the area by visitors or dogs.

Historic Structures

Historic structures include buildings, bridges, roads, temples, and other manufactured objects that extend the limits of human capability. Structures allow humans to live in harsh climates and in areas far removed from where they work and live (NPS 1998). The structures analyzed in this final plan/EIS include permanent seacoast fortifications and their integral earthworks and Crissy Airfield. The majority of structures analyzed within this final plan/EIS are located within the boundaries of the Forts Baker, Barry, and Cronkhite Historic District; the Presidio NHL; the Fort Mason Historic District; and the Fort Miley Military Reservation (appendix I).

Permanent Seacoast Fortifications and Their Integral Earthworks

Permanent seacoast fortifications (sometimes referred to as batteries) within GGNRA consist of numerous gun batteries of brick, stone, and concrete, partially covered with carefully designed earthworks for additional protection. These seacoast fortifications were a part of an integrated defensive network and contained features and equipment needed to support the big guns mounted therein. This network of defense included permanent fortifications constructed along the San Francisco area coastline and was "designed and emplaced to protect naval bases, seaports, and other important coastal waters from the intrusion of hostile warships" (Freeman et al. 1999, xxi). The history of these defensive structures ranges from the Spanish Colonial and Mexican eras (1794) through the Cold War Era (1974) (Freeman et al. 1999).

The earthwork portions of these permanent seacoast fortifications are defined as "military construction formed chiefly of earth, used in both defensive and offensive operations" (Freeman et al. 1999, xiv) and are inherently fragile in nature. They consist of earth placed over and around fortifications of brick, stone, and concrete (batteries) that were used as defensive structures, with features and equipment necessary to support a variety of artillery (figure 3). There are several reasons for the use of earth as a construction material, including its blunting properties against the brunt of powerful offensive ordnance, the relative ease with which structures could be built and repaired, and the rapidly changing military technology that made it difficult to know what to prepare for defensively (Freeman et al. 1999, 46-47).

The earthwork portions of these seacoast fortifications were designed not only to absorb artillery impact but also to camouflage fortifications from the air and sea. While the earthworks are the most apparent visual element of these structures, they mask the internal hardened (concrete, stone, masonry) features within such as magazines, artillery emplacements, armatures, entryways, etc. To avoid penetration by offensive artillery, the resistance of a battery was calculated in "so many feet of earth placed in front of so many feet of concrete" (Freeman et al. 1999, 47). As of 1910, the Office of the Chief of Coast Artillery required that all exterior slopes of new coastal defenses conform to their surrounding topography, with geometrical contours avoided, and be further concealed by the appropriate planting of the slopes (Freeman et al. 1999, 80).

FIGURE 3. BATTERY EAST, WITH EROSION OF EARTHWORKS EVIDENT

The earthwork portions of seacoast fortifications evaluated in this final plan/EIS are associated primarily with Fort Baker within the Forts Baker, Barry, and Cronkhite Historic District; Fort Scott and Fort Point within the Presidio NHL; Fort Mason Historic District; and Fort Miley Military Reservation (appendix I). All are considered "well-preserved examples of nearly every important development in military fortification engineering from before the Civil War to the guided-missile era" (Freeman et al. 1999, 1) and are considered contributing features to NRHP or NHL resources. Fort Funston, which includes Battery Davis, was removed from the NRHP in 2006 due to resource degradation related to erosion and human use to the point where the site lacked integrity. However, Battery Davis was singled out for eventual inclusion in a NHL District for seacoast fortifications of San Francisco Bay. This nomination is being prepared as of this writing. For this reason, Battery Davis is included in the analysis of historic structures. In general, permanent seacoast fortifications are described as being in good condition (Freeman et al. 1999, 116). However, they are considered fragile and are subject to natural erosion processes that are accelerated by loss of vegetative cover, digging, social trail uses, etc.

Crissy Airfield

Crissy Airfield is located along the northern shoreline of the Presidio NHL on the site of a previous landfill completed for the 1915 exposition (map 26). Crissy Airfield was established in 1919, functioning as the center of West Coast military aviation operations from 1919 to 1936 (NPS 2009f). It is the only Air Coast Defense Station airfield in the country that retains the majority of its original buildings—hangars, barracks, guardhouse, etc. A related signal cable hut constructed in 1921 (building 946—partially buried structure) could also be affected by the plan. Both the airfield and the signal hut are considered to be in good condition.

Cultural Landscapes

Cultural landscapes are environmental settings that humans have created that reveal the fundamental ties between people and the land and reflect the human need to grow food, give form to settlements, meet a

need for recreation or work, or bury the dead (NPS 1998). They are the result of decades—or in some cases, centuries—of cumulative human land uses, politics, economies, and cultures. Alterations to cultural landscape features can adversely affect the resource and its NRHP status.

Most of the historic structures that are analyzed in this final plan/EIS are located within larger cultural landscapes or historic districts. As effects on elements (e.g., historic structures) of a cultural landscape can affect its overall integrity, both cultural resource types are analyzed. Cultural landscapes within the project APE include the Forts Baker, Barry, and Cronkhite Historic District; the Presidio NHL (including the U.S. Coast Guard Station Historic District); Fort Mason Historic District; and Fort Miley Military Reservation (maps 25 and 26). The Rancho Corral de Tierra site may be potentially eligible for listing on the NRHP for ties to the history of ranching operations dating back to the Mexican rancho era. This site includes landscape features, structures, and archeological sites, including the Francisco Guerrero Adobe Site, and the Martini Creek Ohlone sites (NPS 2011b, 105).

Forts Baker, Barry, and Cronkhite Historic District

The Forts Baker, Barry, and Cronkhite Historic District encompass approximately 2,300 acres in Marin County (map 25). Its period of significance ranges from 1866 to 1974 and it is associated with the history of coastal defense in the San Francisco Bay Area. Fortifications constructed in this area were designed to enhance those at the Presidio, south of the Golden Gate, in guarding against the entry of enemy ships into San Francisco Bay (NPS 2005d, 3; 2008f). Resources that could be affected by the plan include earthwork portions of seacoast fortifications at Fort Baker (see discussion above) as well as numerous field fortifications primarily associated with Fort Cronkhite.

Field Fortifications. Even though no less significant than previously described earthwork portions of seacoast fortifications (above), field fortifications are less conspicuous WW II features that include hand-dug foxholes, trenches, machine gun pits, etc. that provided supplemental support to nearby fortified batteries (appendix I) (figure 4). Those associated with Fort Cronkhite are primarily located north of the cantonment area, in the general vicinity of Wolf Ridge. Similar resources also appear on the high ground at Fort Barry and Fort Baker (map 25). All are considered contributing resources to the Forts Baker, Barry, and Cronkhite Historic District.

All of these features represent simple "fighting positions," measuring about 6 to 8 feet long and 2 feet deep, where one or two men could provide defensive fire with rifles. These positions could be quickly dug with the simplest hand tools and only provided minimal protection. When time allowed, deeper and longer zigzag trenches were constructed that were reinforced with wooden sides and thwarts to keep them from collapsing. The purpose of the zigzags was to limit shrapnel damage and prevent attacking aircraft from strafing the entire length of the trench (Martini n.d.a, 40).

There is little formal military documentation of these temporary defensive works, with period photographs providing the best record of the extent and design of these features. Many of them have been lost to the elements. Photos taken after WW II indicate that grading activities in these areas may have filled in many of these features. Today, their locations are generally indicated only by suspicious landforms or gun mounts sticking up from the sand (Martini n.d.a.). What is left of these temporary fighting positions is inherently fragile in nature; they are extremely vulnerable to erosion and ground disturbance (e.g., digging). In some cases, dense vegetation offers some protective cover for these resources.

Source: Martini n.d.a, 43

FIGURE 4. EXAMPLE OF TEMPORARY FIELD FORTIFICATION WHICH SUPPORTED NEARBY FORTIFIED BATTERIES

The Presidio of San Francisco National Historic Landmark

The Presidio was designated a NHL in 1962 and is described as:

> the oldest Army installation operating in the American West and one of the longest-garrisoned posts in the country. The size and duration of this installation has resulted in a complex landscape in which many layers of history overlap in a relatively small geographical area. (NPS 2006f, 19)

The Presidio's NRHP eligibility is related to its numerous historical, architectural, and archeological resources associated with important events in American history. Its period of significance is from 1776 to 1945 and also includes the year 1951. This period encompasses the Spanish colonial, Mexican, and American periods of governance. It is described as a "vast district entity … [that] possesses exceptional value in illustrating the history of the United States through its association with important historical events and its outstanding representation of patterns of national development through multiple periods" (NPS 2006f, 20).

The boundaries of the Presidio NHL encompass numerous cultural resources that could be affected by this plan, including Crissy Airfield, the U.S. Coast Guard Station Historic District, numerous seacoast fortifications and their integral earthworks, and field fortifications associated with Fort Winfield Scott and Fort Point. These resources are associated with the Presidio's Political and Military Affairs period (1865–1939) and the WW II period (1941–1945) (NPS 2006f, 20) and are considered as contributing to the significance of the Presidio NHL (map 26). Descriptions of the earthwork portions of seacoast fortifications and Crissy Airfield are found under "Historic Structures" above.

U.S. Coast Guard Station

The U.S. Coast Guard Station Historic District is a 5-acre district containing historic structures determined to be contributing to the larger Presidio NHL. Its period of significance dates from 1915 to 1964 and is related to several important structures associated with maritime transportation and early social and humanitarian efforts, such as providing aid to stranded or wrecked ships (NPS 2006f, 21). Affected elements of the district include a cypress hedge planted in 1915, which defined the buildings and site perimeter of the U.S. Coast Guard Station. Much of this hedge was replaced with junipers in 1996 and, along with other landscaping, continues to convey the original formal design intent and define the edges of the property, setting it apart from the rest of the area (i.e., Crissy Airfield and the Presidio) (NPS 2006f) (map 26).

Fort Winfield Scott

Fort Scott was established in the western part of the Presidio of San Francisco as a separate coastal artillery post in 1912, serving as an artillery garrison and headquarters of the Artillery District of San Francisco. The fort housed 17 Endicott-era gun batteries that were constructed, armed, and manned at varying levels between 1891 and 1946 (NPS 2013b, 1). Seacoast fortifications and their integral earthworks and field fortifications within Fort Scott (along Baker Beach) are included in this analysis.

East Battery—Fort Point

Construction activities at Fort Point, located at the south shore of the Golden Gate, ranged from 1853 to 1861 (Martini n.d.b). At completion, the fort and its outworks had emplacements for 141 guns of various types, but only a fraction of those were mounted at that time. The lowest tier of artillery was constructed as close as possible to water level so cannonballs could ricochet across the water's surface to hit enemy ships at the waterline. The structure was protected by 7-foot-thick walls, had multi-tiered casemated construction typical of Third System forts, and was unique to the West Coast (NPS n.d.b, 1). Earthwork portions of seacoast fortifications within the fort are included in this analysis.

Field Fortifications. Many of these features are located within the Presidio NHL and are more specifically associated with Fort Winfield Scott along the coastal bluffs north of Baker Beach. These resources are represented as "hastily built field fortifications constructed … in the aftermath of the Japanese attack on Pearl Harbor, when the possibility of raiding parties landing on Baker Beach was a very real threat" (Martini n.d.a, 4). During WW II, mobile antiaircraft guns were situated in sandbagged positions, and numerous trenches and foxhole fighting positions were dug along the Baker Beach bluff area (Martini n.d.a). All are considered contributing resources to the Presidio NHL. Please refer to the discussion above (Forts Baker, Barry, and Cronkhite Historic District) for more general information on field fortifications.

Fort Mason Historic District

The roughly rectangular 68.5-acre historic district is located east of the Presidio NHL, along San Francisco Bay. It is represented by a collection of military structures and its period of significance is from 1855 to 1953. The fort illustrates "the evolution of military landscape planning and architecture over a one-hundred-year period" (NPS 2004a, 4). Earthwork portions of seacoast fortifications located within this historic district have the potential to be affected by the final plan/EIS (map 26).

Fort Miley Military Reservation

The Fort Miley Military Reservation is a roughly rectangular area (approximately 54 acres) located south of the Golden Gate Bridge on Point Lobos, just east of the existing El Camino del Mar Trail and Road. The U.S. Army acquired the land in 1893 with the intent of constructing gun and mortar batteries for the defense of San Francisco Bay. The military reservation is composed of three distinct complexes of structures (east, west, and central). Elements that contribute to the historic district include several batteries on the east and west sides of the reservation, a searchlight power plant, a few miscellaneous earthworks, fire control stations, and an ordnance storehouse. Descriptions of the earthwork portions of seacoast fortifications at Fort Miley are included under "Historic Structures" (above). Between the east and west portions of the reservation, a large Veterans Administration (VA) hospital replaced a variety of historic barracks, storehouses, etc. in 1934. Earthwork portions of masonry gun batteries located within this historic district have the potential to be affected by the final plan/EIS (map 26).

San Francisco Bay Discovery Site

Located at Sweeney Ridge, the San Francisco Bay Discovery Site, or Portola Discovery Site, is the location on which Captain Juan Gaspar de Portola and his party discovered the San Francisco Bay. The party had gotten lost while looking for Monterey Bay, eventually scaling Sweeney Ridge for a vantage point. At the top Portola discovered the San Francisco Bay, which had not yet been discovered by seafarers. This discovery led to the development of the Presidio to protect the Bay Area for the next two centuries (NPS 2007d). No structures are or have been present at the site, and the view has changed greatly with the development of the Bay Area, but still affords an expansive view of the Bay Area (NPS 2007d; NRHP 1978). The site is designated as a NHL, and is listed on the NRHP.

CLIMATE CHANGE

The *National Environmental Policy Act of 1969* (NEPA) process cannot be used to regulate greenhouse gases, but it can be used to analyze the impacts of actions that would intensify climate change. Recent mandates have been issued that will provide support and guidelines for addressing climate change. Secretarial Order 3289 established the Climate Change Response Council, which will work to increase the understanding of climate change and to coordinate an effective response to its impacts (SOI 2009, 1-2). Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance, requires agencies to measure, manage, and reduce greenhouse gas emissions toward agency-defined targets in an effort to support sustainable practices. The order also requires agencies to meet energy, water, and waste-reduction targets (NPS 2009g, 1). On February 18, 2010, the Council on Environmental Quality (CEQ) released a draft Guidance Memorandum on the consideration of greenhouse gas emissions and climate change impacts as part of compliance with NEPA (Nelson et al. 2010, 1). GGNRA is one of 52 NPS units involved in the Climate Friendly Parks Program, which is a collaboration of the NPS and the U.S. Environmental Protection Agency aimed at addressing climate change. The purpose of the program is to measure greenhouse gas emissions, develop sustainable strategies to mitigate these emissions and adapt to climate change impacts, and educate the public about these efforts (NPS 2009h, 1).

All beaches in GGNRA are highly to very highly vulnerable to climate change effects because of their coastal slope, wave heights, and the range of local tides. A sea-level rise of 3 feet or more would likely inundate most, if not all, of the sandy beaches at GGNRA (Saunders et al. 2006, 17–18). If global warming progresses at predicted rates, sea level could rise 3 feet or more along coastal California by the end of this century.

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The sea level at Crissy Field has risen by 0.2 meter (0.7 feet) over the past 100 years, and predictions indicate that it would rise 0.5 to 1.6 meters (1.6 to 5.2 feet) more by 2100 (NPS n.d.c, 1). By 2100, the volume and effects of each annual flood could be the equivalent of today's 100-year flood (NPS n.d.c, 1). Since the term of this final plan/EIS is only 20 years and changes to sea level along the coast of California are predicted by 2100, climate change is not discussed further in this document because shoreline changes would not be expected during the life of this final plan/EIS.

GGNRA sites are also vulnerable to the effects of an increase in the intensity of storms as a result of climate change. Climate change effects are predicted to include changes in temperature, precipitation, evaporation rate, ocean and atmospheric chemistry, local weather patterns, and increases in storm intensities (NPS 2011b, 1-31). Such storms may result in increased storm wave energy and altered flow regimes (NPS 2011b, 1-132). These storms can cause a drop in air pressure, which increases tide height, causing a greater flooding threat. Additionally, higher-intensity storms bring greater winds, which can result in larger and more erosive waves (Tam 2012, 3). Storms may also increase rainfall, resulting in a greater volume of water in creeks and waterways. Because approximately 40 percent of California's land drains to the San Francisco Bay, storm floods are anticipated to last longer within the bay (Tam 2012, 3).

VISITOR USE AND EXPERIENCE

PARK VISITATION INFORMATION

Since measurement of park visitation began in 1973, it is estimated that over 500 million people have visited Golden Gate, making it one of the NPS's most highly visited units (NPS 2008f, 2). Since GGNRA is made up of many park areas and does not have a central entrance where visitors can be counted, it is difficult to accurately count the number of people who visit GGNRA sites each year. The park employs a variety of counting methods to capture the number of visitors who drive to the sites as well as visitors who walk, bike, or ride public transportation to the sites. Most of the traffic counters multiply the number of vehicles by a multiplier to account for the number of people in each car. Some sites have additional seasonal multipliers to capture walk-in visitors (NPS 1997, 1).

The park exposes visitors to many of the resource values that exemplify America's national park system. The area includes miles of hiking trails, five campgrounds, hundreds of historic sites and structures, and 59 miles of bay and ocean shoreline and beaches. There are five visitor centers in the park and nine retail facilities run by park concessionaires, nonprofit partners of the park. Overnight stays are available at four walk-in campsites in the Marin Headlands, one drive-in campsite at Kirby Cove, two hostels (one at Fort Mason and another in the Marin Headlands), the newest national park lodge at Fort Baker, and local hotels and inns in areas outside the park boundaries (NPS 2009c, 131). Overnight facilities at Rodeo Beach are used extensively by youth groups, such as the Headlands Institute and Point Bonita Young Men's Christian Association. Activities include hiking, jogging, water sports, hang gliding, horseback riding, fishing, bike riding, camping, wildlife viewing, dog walking, sunbathing,

Since measurement of park visitation began in 1973, it is estimated that over 500 million people have visited Golden Gate, making it one of the NPS's most highly visited units.

stewardship opportunities, and interpretive and educational opportunities. Visitors to the park come as individuals, as families, and as part of private and commercial tour groups and educational groups (schools, summer programs, youth groups, after-school programs, etc.). They come to recreate, learn, and attend special events. Additionally, participants in special use permits (SUPs) and events also are exposed to the park settings and resources.

Summary of Visitation Trends

The annual visitation trends for GGNRA show a dramatic increase from its creation in 1972 (first annual visitation recorded in 1973) to its peak of over 21 million visitors from 1986-88, with a slight decrease from 1983 to 1985 (figure 5) (NPS Stats). The initial growth and variability in visitation from 1973 to 1988 is expected since the park was expanding during these years—more than 28,000 acres were added to the park since 1974 (Rothman 2002). In addition, prior to 1989, visitor counts at the GGNRA included visitors to the San Francisco Maritime National Historical Park. Since 1989, visitor counts for the GGNRA and San Francisco Maritime National Historical Park have been tabulated separately, resulting in a drop in annual visitation from the GGNRA of approximately 5 million. When factoring for the change in visitation counts related to the authorization of San Francisco Maritime National Historical Park, annual visitation to the GGNRA is shown to have reached a capacity of 13 to 15 million visitors since 1980.

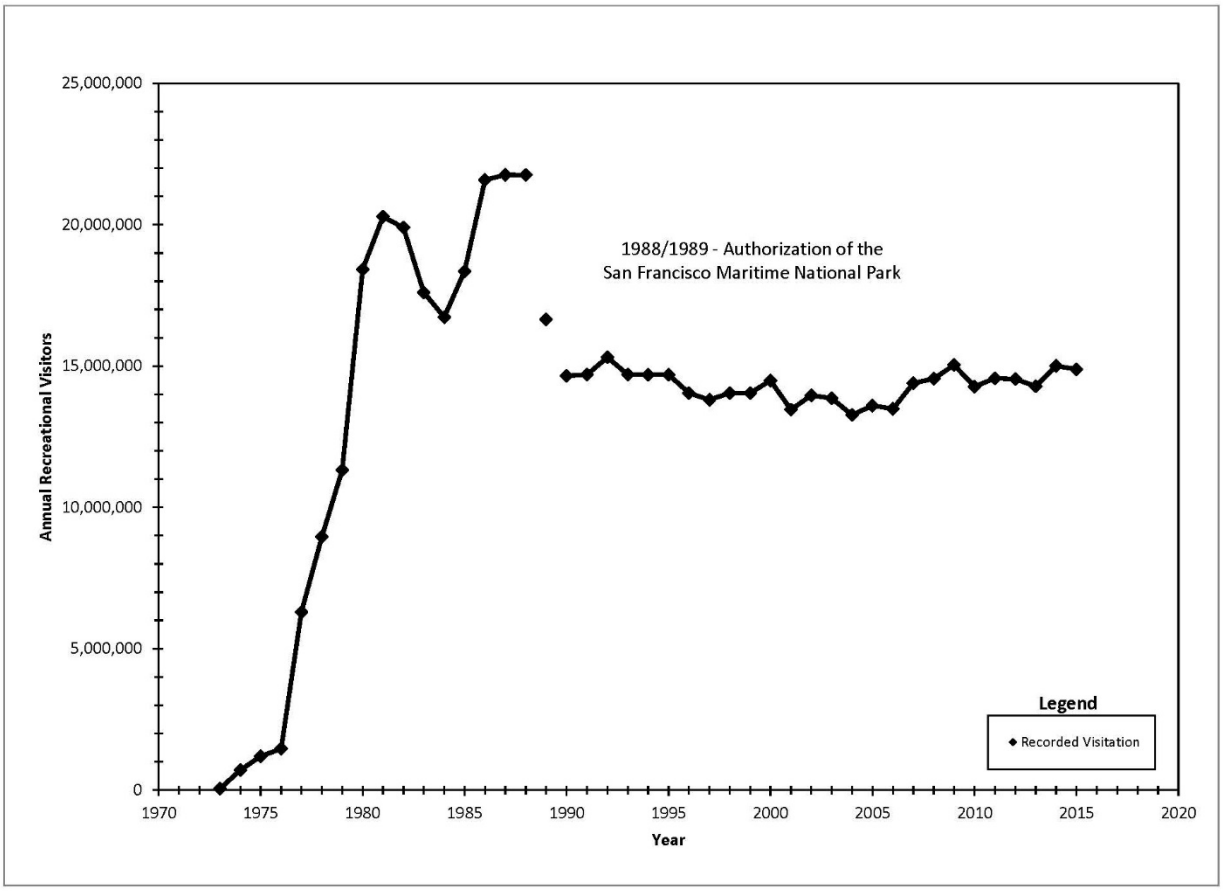

FIGURE 5. RECORDED ANNUAL VISITATION TO GOLDEN GATE NATIONAL RECREATION AREA, 1973 TO 2015

Monthly visitor use data from 2005 through 2016 were analyzed to evaluate the variance of visitation rates by month (NPS Stats). The data indicated only slightly higher use from April through September, accounting for approximately 54 percent of visitors year round. This shows that visitation to the park is fairly constant regardless of the time of year.

Forecasts of Future Park Visitation (Based on Visitation Trends)

The 2016/2017 NPS Forecast of Recreation Visits for GGNRA predicts a stable annual visitation in 2016 and 2017 of 14.6 million (figure 6) based on trend line extension of visitation data from the past five years (NPS Stats). Trend line extensions usually work well for projections two to three years into the future for park facilities. However, the confidence level is fairly low when extending this kind of forecast out to 20 years (Gramann 2003).

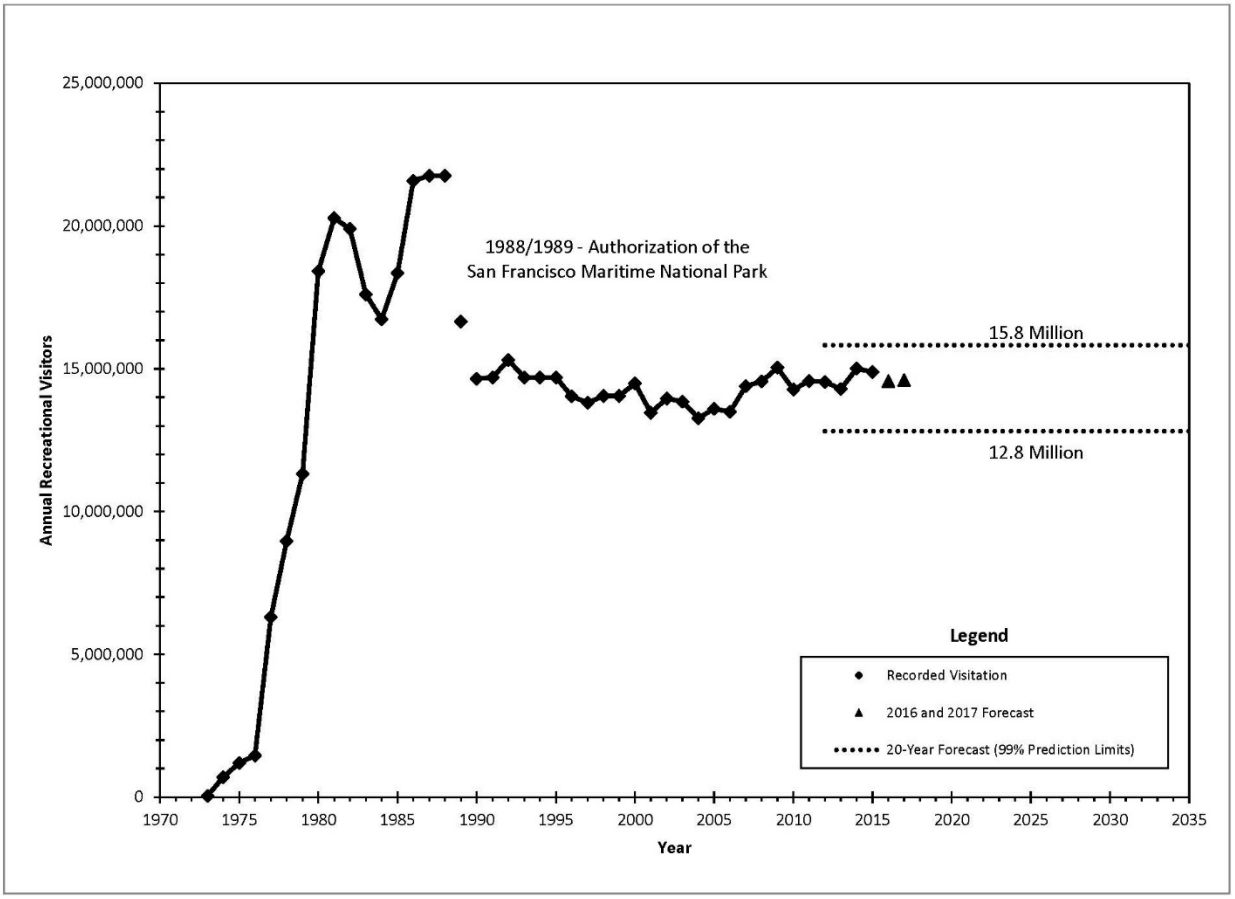

FIGURE 6. FORECASTED ANNUAL VISITATION TO GOLDEN GATE NATIONAL RECREATION AREA

Visitors Arriving at Rodeo Beach
Credit: NPS

Our long-term forecast method utilizes data recorded since 1990, since this is after San Francisco Maritime National Historical Park was removed and there have been minor changes to the "Public Use Counting and Recording" methodologies[2]. Within this longer time frame of 20-years, visitation does not exhibit any significant increasing or decreasing trend, but rather is observed to oscillate about a mean annual visitation of approximately 14 million. This pattern of visitation is assumed to continue unless a large expansion or change of the park boundaries occurs. A 99 percent prediction interval (PI) was developed representing the lower and upper limits of annual visitation with 99 percent confidence using the following formula:

$$PI = \bar{x} \pm t_{1-\alpha/2,n-1} \times \sqrt{s^2{}_x \left(1 + \frac{2}{n}\sum_{l=1}^{5}(n-1)\rho_l\right)\left(\frac{1}{n}+1\right)}$$

$\bar{x}$ = average annual visitation from 1990 to 2016,

s_x = standard deviation in annual visitation from 1990 to 2016,

n = number of years in data set ($n = 20$ years),

ρ_l = the autocorrelation between visitation l years apart, and

$t_{1-\alpha/2,n-1}$ = critical value of the two-sided t-statistic with $\alpha = 0.01$ for a 99 percent prediction interval.

This formula accounts for correlation between annual visitations up to 5 years apart consistent with the NPS practice of conducting 2-year forecasts by linear regression of the past 5-years of visitation data. The results of the prediction interval calculation are presented in figure 6 that shows that annual visitation is expected to remain in the range of 12.8 to 15.8 million.

[2] From 1981 to 1994, "Public Use Counting and Recording Instructions" were mildly different than the methodologies used from 1997 to the present day. The older standard included fewer traffic counters (11 compared to 18), and used slightly different "Persons per Vehicle (PPV)" multipliers. The methodologies for the years 1995-1996 are unavailable online, but are assumed to resemble the current procedures that have been in place since 1997.

Forecasts of Future Park Visitation (Considering Population Trends)

Predicting future park visitation based on population forecasts is often problematic when looking at smaller-scales (i.e., state and county levels) (Gramann 2003). This is due to several reasons. For example, the state-level Census Bureau projections do not incorporate the influence of economic swings on population change, and the Census Bureau does not project population change at the county level—which is left to the individual states, and thus is not standardized. In addition, park facilities that are designed for repeat visitors would be affected differently by changes in the local population than those designed for one-time visitors or travelers. In result, it is suggested that describing visitor population characteristics and tracking how they are changing is critical to accurate long-term forecasting (Gramann 2003). Annual visitation data for GGNRA (NPS Stats) was compared to population growth trends of the San Francisco Bay Area[3] (Bay Area Census), and it was found that there is no apparent association (coincident, leading, or lagging) between Bay Area population and annual visitation to the park, most likely because park visitation is influenced by other factors than just resident population, such as amount of non-resident visitors, recreation use, etc. This suggests that the predicted 15.8 percent [4] increase in population estimated for the San Francisco Bay area in 2030 would not result in an equal increase in park-use. However, although not directly correlated, the projected population increase may still result in some increased park usage.

Overall Forecasts of Future Park Visitation

Given the overall visitation trends to GGNRA, it can be interpreted that the park has been operating at capacity since 1990, and would not experience a significant increase in visitation over the next 20 years. Assuming there are no major changes in park boundaries or facilities, park visitation would range between 12.8 million to 15.8 million people annually, similar to how it has been operating over the previous 20 years.

Visitor Use by Dog Owners

The San Francisco Bay Area is highly urbanized. In many parts of the Bay Area, GGNRA lands are the backyards of the citizens, and residents have come to expect public lands to be made available for dog walking and other recreational activities. Many visitors report that they enjoy visiting GGNRA sites with their dogs off leash. They cite the importance of adequate exercise opportunities for their dogs as well as the importance of social connections with other dog walkers as reasons for the necessity of off-leash recreation (NAU 2002a, 42). Many dog walkers are specifically looking for an off-leash beach experience for their dogs. Because GGNRA manages the majority of the City of San Francisco bay and ocean shorelines, they come to this park.

To collect current and detailed information regarding visitor use of the park by dog owners, NPS conducted a survey in 2012 to measure customer satisfaction related to dog walking at the GGNRA sites and to determine where visitors would go if they were not satisfied. This survey, *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a), evaluated the perception of and satisfaction with the current on

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[3] The Bay Area consists of nine counties: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano and Sonoma

[4] The 15.8% increase is the average increase of all the Bay Area counties; San Francisco County in particular is only expected to increase by 1% by 2030. Found here: http://www.abag.ca.gov/planning/currentfcst/regional.html.

and off-leash dog walking policies by both dog walkers and non-dog walkers, and the potential for redistribution of use based on access changes. The survey is a result of the public comments made by individuals representing both dog walkers and non-dog walkers of the park who requested additional analysis of the possible redistributive effects which could occur through managing and restricting dog walking. A postcard was mailed or emailed to all individuals (approximately 7,000) on the GGNRA dog management mailing list. The respondents were given the option to respond to the survey on line or to request a hard copy of the survey for mailing back to the park. The survey consisted of 15 questions, with a primary focus on where a visitor might go instead if dog walking (both on and off leash) were allowed or restricted. The respondents were also asked to provide feedback regarding how well they were satisfied with the management practices and processes, and what improvements they might make to inform the future management for both dog walkers and non-dog walkers.

Of the approximately 7,000 individuals contacted, only 897 responded to the survey. Respondents included 662 dog walkers, 20 commercial dog walkers, and 212 individuals who do not walk dogs at the park (NPS 2012a, 6). General satisfaction at the park was included in the survey using the following categories: "not at all satisfied," "slightly satisfied," "moderately satisfied," "very satisfied," and "completely satisfied" (NPS 2012a, 10). Of the dog walkers that responded to the survey, 431 individuals indicated that they were "not at all satisfied," "slightly satisfied," or "moderately satisfied," with on-leash dog walking opportunities at the park. These same respondents were then asked if they would go (inside or outside GGNRA) to an alternative site for dog walking. The five most popular alternative sites indicated in the survey for off-leash dog walking included Pine Lake/Stern Grove, Golden Gate Park (all areas), McLaren Park, Ocean Beach, and Alta Plaza (NPS 2012a, 13-15). The five most popular alternative sites for on-leash dog walking included Pine Lake / Stern Grove, Golden Gate Park (all areas), McLaren Park, Marin Headlands Trails, and Alta Plaza (NPS 2012a, 19-21). In addition, a high number of answers to survey questions asking where they would go instead of their preferred dog walking locations if they were not satisfied, included "I don't know." For example, the second most popular answer to the question about an alternative site for on-leash dog walking was "I don't know" and the second most popular answer to the question about an alternative site for off-leash dog walking was "I don't know" (NPS 2012a, 13, 19).

Of the dog walkers that responded to the survey, 244 individuals indicated that they were "not satisfied" or "slightly satisfied" with on-leash dog walking opportunities at their most frequently visited sites at the park and 206 individuals were "not satisfied" or "slightly satisfied" with off-leash dog walking opportunities their most frequently visited sites at the park (NPS 2012a, 11, 16). A total of 433 individuals indicated that they were "moderately satisfied" to "completely satisfied" with on-leash dog walking at their most frequently visited sites at the park and 470 individuals indicated the same for off-leash dog walking areas (NPS 2012a, 11, 16). Nearly half of the respondents indicated that their round trip travel to their favorite GGNRA sites is up to 10 miles (NPS 2012a, 7). Limitations to this survey included a small sample size of respondents; less than 13 percent of individuals responded to the survey.

The *Economic Analysis of the Proposed Rule for Dog Management in the Golden Gate National Recreation Area* (IEC 2016) presents an assessment of overall visitor use and specifically use by dog walkers at GGNRA. This assessment uses multiple sources of data and estimates that dog walkers comprise approximately 10–12 percent of visitors at areas included in this final plan/EIS. This number was reached by comparing the overall number of dog walkers with the overall number of visitors (8.9–11 percent) and rounding up slightly to account for removing areas (Muir Woods and Alcatraz) not included in this final plan/EIS.

In addition to the above sources, information on the current use of GGNRA sites has been compiled and is discussed in this section. For general purposes, overall visitor use and dog use at each GGNRA site is characterized as either low, moderate, or high (table 10). An area with high visitor use is defined as a park

beach, trail, or other feature that is nearly always occupied and is often crowded; an area with moderate visitor use is defined as one that is usually occupied, but the area is only occasionally crowded; and an area with low visitor use is defined as one where visitors sometimes see other visitors, but the area is never crowded. At some sites, use is dependent on weather conditions, so a range in the use pattern is described. Use by visitors walking dogs is considered high when it reaches >30 percent, moderate is 10–30 percent, and low is <10 percent. These qualitative thresholds were developed by the NPS with input by the Negotiated Rulemaking Advisory Committee. They were used by the Committee to provide feedback to the NPS on levels of use in park areas (NPS 2006g, 1–10).

TABLE 10. SUMMARY OF VISITOR USE AT EACH SITE IN GGNRA

Site	Visitor Use	Percentage of Visitors Walking Dogs
Stinson Beach	High on weekends, low to moderate on weekdays (swimmers on beach)[b]	Low to high (picnic area visitor use varies seasonally)[a]
Homestead Valley	Low—local use[a]	Low[a]
Alta Trail / Orchard Fire Road / Pacheco Fire Road	Low to moderate (runners, bikers, hikers)[a]	High (commercial dog walkers)[a]
Oakwood Valley	Moderate (hikers, runners, bikers; equestrian riders)—local use[a,b]	Moderate[a]
Muir Beach	High on weekends, moderate to high on weekdays (beachgoers, hikers)—local use[b]	Low to moderate (during the non-summer season)[b,c]
Rodeo Beach	Moderate to high (beachgoers)[b]	Low to moderate[b,c]
Marin Headlands Trails (includes Tennessee Valley)	Low to high (hikers, runners, cyclists, beachgoers, equestrian riders, school group trips)[b]	Low to moderate[b]
Fort Baker	Moderate[a]	Low[a]
Upper and Lower Fort Mason	Moderate to high (walkers, bikers, runners, sightseers)—local and visitor use [a,b]	Low to moderate (private and commercial dog walkers)—local use[b]
Crissy Field	Moderate to high (walkers, bikers, runners, school group trips, sightseers)[a,b]	Low to high (private and commercial dog walkers, trend is likely moderate overall dog use)[b,c]
Crissy Field WPA	Low to moderate (walkers, beachgoers)[a]	Low to moderate[a]
Fort Point	Moderate to high (runners, bikers, walkers, sightseers)[b]	Low (may seem higher due to limited space)
Baker Beach	Low to moderate (beachgoers, picnickers)[a,b]	Low to moderate[b,c]
Fort Miley	Moderate (picnickers)—local use[a]	Low[a]
Lands End	Moderate (walkers, hikers, runners, sightseers)[a,b]	Low to moderate[b]
Sutro Heights Park	Moderate (walkers, garden- and wedding-goers)[b]	Moderate[b]
Ocean Beach	Moderate to high (beachgoers, walkers, runners, birdwatchers, picnickers, equestrians, surfers)[a,b]	Low to high[b,c]
Ocean Beach SPPA	Moderate (beachgoers, runners)[b]	Moderate[a]
Fort Funston	High (dog walkers, walkers, hang gliders, fishermen, equestrians, birdwatchers, environmental center participants)[a,b]	High (private and commercial dog walkers)[b,c]

Site	Visitor Use	Percentage of Visitors Walking Dogs
Mori Point	Moderate to high (walkers, runners, bikers)—local use[a,b]	Moderate to high on weekdays depending on the season[b]
Milagra Ridge	Low (bikers, walkers, hikers)—local use[b]	High[b]
Sweeney Ridge / Cattle Hill	Low to moderate on weekends (hikers, bikers)[b]	Moderate[b]
Rancho Corral de Tierra	Low to moderate (hikers, runners, bicyclists, equestrians) – local use [a]	Moderate overall to high in Montara section

[a]Based on best professional judgment of park staff.

[b]Based on the GGNRA Dog Management Plan/EIS Current Conditions table developed by the Negotiated Rulemaking Advisory Committee dated September 15, 2006 (NPS 2006g).

[c]Based on visitation surveys collected over a four day period in 2008 and 2011 (IEC 2011).

Table 10 includes results of a park visitation study conducted in 2008 and 2011 at six of the most popular GGNRA sites. On-site visitor count studies were conducted in 2008 at four of the beach sites addressed in this final plan/EIS (Rodeo Beach, Crissy Field, Baker Beach, and Ocean Beach) as part of the Cosco Busan Oil Spill Natural Resource Damage Assessment (USFWS 2009b). On-site count studies were conducted in August 2011 at two additional popular GGNRA beaches (Muir Beach and Fort Funston), in a survey titled *Assessment of Visitor Activities at Six Sites Within Golden Gate National Recreation Area* (IEC 2011). To ensure consistency, the 2011 survey was conducted using the same methodology as the 2008 surveys (IEC 2011, 10). On-site counts were conducted over a four day period which included two weekdays and two weekends. The counts were scheduled to cover nearly all daylight hours. Visitor counts were maintained on a tally sheet where field personnel recorded all visitors leaving the site. Every visitor was placed in one (and only one) of the following activity categories: hang glider (Fort Funston only), surfer/windsurfer/ kiteboarder, motorized boater, non-motorized boater, angler, biker, rollerblader/ rollerskater/skateboarder, picnicker, dog walker, runner/walker, crabber, other recreator, park staff/law enforcement, and school group (Rodeo Beach only). When visitors left in groups, each person in the group was categorized individually, according to the equipment that he or she was carrying and according to whether or not he or she was accompanied by a dog. For example, if two visitors left the park together but only one carried a fishing pole, then only one would be classified as an angler. Similarly, if two visitors were walking a single dog, only one would be classified as a dog walker. The only exception to this rule was for picnickers and boaters, as all members in the group were placed in a single category. Many visitors could not be categorized and were classified as "Other." The "Other" category is a catch-all category capturing visitors who were not carrying identifiable equipment, did not have a dog with them, and were clearly not running or walking for exercise. Visitors classified as "Other" frequently included beach visitors and sightseers. During the 2011 visitor counts at Fort Funston and Muir Beach, field personnel counted the number of dogs in addition to counting people. The dog counts covered all dogs leaving the site, including dogs with visitors who were not classified as dog walkers (e.g., a dog with a fisherman or picnicker). Field personnel did not record whether dogs were on or off leash (IEC 2011, 1-4).

It is important to note that while all visitors could be classified, the activity classifications may not be accurate for all visitors. In particular, visitors who leave the site without identifiable equipment and without a dog are difficult to classify. In addition, the characterization of activities is based on observations by field personnel rather than interviews with visitors. The characterizations may differ from the responses visitors would provide if they were asked to select a primary activity from a list of potential options. For several activities, the observer characterizations are likely to be reasonably accurate. For example, visitors with equipment (such as surfers and bikers), and school groups are easily identifiable.

For activities without clearly identifiable equipment, observer characterizations are likely to be less accurate. There may be some error in determining whether or not visitors are dog walkers. For example, when two individuals were observed walking a dog, only one of the visitors were classified as a dog walker, but it is possible that both would describe themselves as dog walkers if interviewed. Conversely, some observers with dogs and classified as a dog walkers may not characterize their primary activity at the site as dog walking if they were interviewed; rather they may say they were walking, running, picnicking, or sightseeing.

It is also important to note that the survey conclusions were based on only four days of on-site observations. These four days may not accurately represent a mix of activities pursued by visitors throughout the year. Visitor activities can vary throughout the year due to seasonal variations in weather, the amount of available daylight for outdoor recreation, and the number of vacation days available. In addition to seasonal changes, the mix of visitor activities could have been impacted by unusual weather or special events occurring at specific sites. At Fort Funston, the annual hang gliding race and barbeque occurred during the on-site count weekend. There was also unusually warm weather during the weekend counts in 2008, which may have increased the number of visitors pursuing water-related activities such as surfing and swimming (IEC 2011, 21).

Monthly visitation estimates were developed by combining visitation estimates from the four-day count period with monthly vehicle counts provided by NPS. Automated vehicle counters are located at site entrances and count vehicles entering each site. Vehicle counters were used to determine the number of vehicles entering each site on each day of the four-day count period. The daily vehicle counts were combined with daily visitation estimates to estimate the number of visitors per vehicle. These visitors-per-vehicle estimates were then multiplied by the monthly vehicle counts to estimate monthly visitation at each site. Monthly visitation estimates were not developed for Rodeo Beach because the site does not have a vehicle counter at the main entrance (IEC 2011, 7-8). The seasonality of visitation did not appear to be particularly strong at the six sites surveyed. Visitation was fairly consistent throughout the year; however, the late spring to early fall months (May through September) generally had the highest visitation levels, while the late fall and early winter months (October through December) generally have the lowest. Across the sites with automated vehicle counters (excludes Rodeo Beach), July had the highest total visitation while December had the lowest. Results of the visitor use surveys at the six sites are shown in table 11 and are discussed below under the appropriate site in the paragraphs that follow (IEC 2011, 17).

The results of the visitation surveys conducted in 2008 and 2011 at Rodeo Beach, Crissy Field, Baker Beach, Ocean Beach, Muir Beach, and Fort Funston are discussed in more detail in the “Visitor Experience” section.

TABLE 11. SUMMARY OF VISITOR ACTIVITIES AT MUIR BEACH, RODEO BEACH, CRISSY FIELD, BAKER BEACH, OCEAN BEACH, AND FORT FUNSTON[A,B]

GGNRA Site	Runners/ Walkers	Dog Walkers	Picnickers	Surfers	Blader/ Skaters	Bikers	Anglers	School Groups	Hang Gliders	Others
Muir Beach	10.3%	5.5%	3.0%	1.8%	0.0%	0.8%	0.0%	0.0%	0.0%	78.5%
Rodeo Beach	17.8%	8.1%	6.6%	6.6%	0.0%	1.9%	0.1%	19.4%	0.0%	39.4%
Crissy Field (trails only)	71.5%	5.8%	0.1%	0.0%	0.4%	21.3%	0.1%	0.0%	0.0%	0.7%
Baker Beach (sand ladder only)	86.8%	6.9%	1.5%	0.5%	0.0%	3.2%	0.0%	0.0%	0.0%	1.1%
Ocean Beach[C]										
North	28.2%	9.2%	7.7%	10.1%	0.3%	1.7%	0.1%	0.0%	0.0%	42.7%
South	21.5%	9.6%	2.9%	11.7%	0.1%	3.7%	0.2%	0.0%	0.0%	50.2%
Total	25.1%	9.4%	5.5%	10.8%	0.2%	2.7%	0.2%	0.0%	0.0%	46.2%
Fort Funston	24.5%	62.1%	0.4%	0.0%	0.0%	0.2%	0.5%	0.0%	1.4%	10.9%

Source: IEC 2011, 10

[a] Observations at Rodeo Beach, Crissy Field, Baker Beach, and Ocean Beach are from November 2008. Observations at Muir Beach and Fort Funston are from August 2011.

[b] At each location, percentages are calculated as weighted average of weekday and weekend percentages, where weights reflect the relative visitation on weekdays versus weekends.

[c] Ocean Beach north is defined as the area of Ocean Beach north of Lincoln Way; Ocean Beach south is defined as the area of Ocean Beach south of Lincoln Way. To calculate the total visitation for Ocean Beach the estimated visitors to the north and the estimated visitors to the south were combined and used to calculate the average using these combined estimates. Therefore, the percentages for Ocean Beach total are effectively weighted averages of the percentages for north and south, with North receiving a higher weight because the visitation estimates are higher in the north.

VISITOR EXPERIENCE

In a 2001 random telephone survey conducted by Northern Arizona University in the four-county area surrounding GGNRA (Marin, San Francisco, San Mateo, and Alameda counties) respondents were asked a series of questions regarding their use of the park. Of the 29 percent of respondents who either owned or cared for a dog, about half (14 percent) had walked their dogs at GGNRA. Of the 14 percent of respondents who walked dogs at the park, approximately 75 percent lived in San Francisco County and 69 percent lived in Marin County. The percentage in San Mateo and Alameda counties was lower: 44 percent and 29 percent, respectively (NAU 2002b, 43). Among those visitors, one in five visited a GGNRA site daily or weekly. Residents in the four-county area who had visited a GGNRA site more than five times within the past year were the most likely to make use of the park for dog walking. Nearly 18 percent of the dog-owning population had also asked that someone else take their dog for a walk in a GGNRA site (NAU 2002b, 17). Regarding visitor experience, approximately 22 percent of all respondents who had visited the park and had seen an off-leash dog reported that off-leash dogs detracted from their visitation experience. Twenty-seven percent said that seeing an off-leash dog added to their visitation experience and 49 percent stated that off-leash dogs did not affect their experience (NAU 2002b, 17). About 74 percent of those surveyed who were supportive of off-leash dog walking said they would prefer dogs off leash only in limited park areas (NAU 2002b, 27). When asked if they supported or opposed allowing off-leash dog walking on trails used by hikers, cyclists, or horses, about 56 percent of respondents who were not strongly opposed to off-leash dog walking either "somewhat opposed" or "strongly opposed" the statement, while about 40 percent either "somewhat supported" or "strongly supported" it (NAU 2002b, 49).

A visitor survey documenting visitor experience for Crissy Field, Ocean Beach, and the Presidio (including some sites in Area B, which is outside of the analysis of this final plan/EIS) was conducted in two phases in the summer and fall of 2008. The first phase of the survey involved an intercept survey (personal contact with visitor) to provide a visitor population profile, including a more thorough understanding of who visits the parks, use patterns, their likes and dislikes, and a preliminary understanding of their visitor experience (Tierney et al. 2009, 1). The second phase of the survey included a follow-up telephone survey with the same visitors interviewed in the first phase to gather more detailed information on visitor experiences, satisfaction, and opinions about park management (Nakagawa, Rodgers, and Adock et al. 2010, 8). Visitors were asked during the survey if they had any suggestions on how their experience at the park site could be improved, allowing for open-ended answers. Of the respondents, 3.3 percent noted that dogs should be kept on leash, visitors should be cited for off-leash dogs, or that there should be no dogs (Tierney et al. 2009, 69). The study also found that 9.6 percent of respondents listed dog walking as their primary reason for visiting the site; the third most cited reason for visiting the sites after walking and jogging. In the second phase of the survey (telephone survey), results found that 16 percent of all respondents cited dogs off leash as a moderate or serious concern associated with their park experience. Although 13 percent of Crissy Field respondents and 22 percent of Ocean Beach cited off-leash dogs as an issue in the survey (Nakagawa, Rodgers, Adock et al. 2010, 44), 10 percent of all respondents cited dogs as a reason for returning to the park sites (Crissy Field, Ocean Beach, and the Presidio Areas A and B) (Nakagawa, Rodgers, Adock et al. 2010, 58). Approximately 7 percent of all respondents mentioned dogs when they were asked to describe special park qualities (Nakagawa, Rodgers, Adock et al. 2010, 67).

In response to the GGNRA Advance Notice of Proposed Rulemaking (ANPR) published in the Federal Register, many park users and nonusers submitted comments regarding their preferences for either the NPS leash regulation or allowing some off-leash dog walking in GGNRA. Thirteen percent of all respondents to the ANPR (49 percent of those who preferred the NPS leash regulation) cited feelings of discomfort around and/or fear of off-leash dogs and/or believed that dogs could endanger their children. Certain user groups may be intimidated by dogs based on past experience or lack of experience with dogs.

A similar percentage of comments stated that dogs make the park unsafe for park users. The following is an illustrative quote related to the issue: "Unleashed dogs present safety hazards to the GGNRA's wide variety of recreational users. Dogs can bite other dogs and people; trip pedestrians, skaters, and cyclists; and jump on and knock down people" (NAU 2002a, 10).

The majority of comments to the ANPR (71 percent) supported some form of off-leash dog walking in GGNRA. This percentage rose to 98 percent among dog owners. Respondents supporting off-leash dog recreation in the park cited the exercise and sociability benefits for off-leash dogs and their owners, the responsibility of dog owners, and the unique park status of GGNRA as a recreational area as reasons for their position (NAU 2002a, 16–17).

In many cases, it appears that how a visitor reacts to off-leash dogs is influenced by whether the visitor owns a dog. For instance, when telephone survey respondents were asked how off-leash dogs affected their visitor experience at GGNRA, 37 percent of dog owners responded that it "added to" it, while 23 percent of visitors that did not own dogs responded similarly. Conversely, only 9 percent of dog owners responded that the presence of off-leash dogs "detracted from" their experience, while 28 percent of visitors that did not own dogs answered similarly. Approximately half of all respondents (54 percent of those who owned dogs and 47 percent of those who did not) stated that the presence of off-leash dogs did not affect their experience (NAU 2002b, 18).

It is not uncommon for users to take more than one dog to the park. Some of these visitors may be dog owners with more than one dog, but many of these users are commercial dog walkers. Commercial dog walkers visit the park with multiple dogs per trip. The 2016 Economic Analysis of the Proposed Rule for Dog Management shows that some GGNRA sites are very popular for commercial dogwalking, while others are not. Sites with the highest amount of commercial dogwalkers included; Rodeo Beach (32–93 percent), Baker Beach (30 percent) and Crissy Field (26 percent) Sites with the least amount of commercial dog use included Muir Beach (0 percent), and Ocean Beach (2 percent). Some respondents to the ANPR (less than 1 percent of total comments) expressed concern related to the use of public lands for commercial purposes such as dog walking. The following is an illustrative quote related to the issue: "Make commercial dog walkers park concessionaires. Require them to pay for the privilege of doing business on park lands" (NAU 2002a). In contrast, an equal percentage of respondents believed that commercial dog walkers provide a public service.

Fifty-eight percent of the 2002 telephone survey respondents believed that the numbers of dogs walked by any one person should be limited. Of those who stated there should be limits, 13 percent stated that one dog should be the limit, 40 percent stated that two dogs should be the maximum, and 28 percent stated that no more than three dogs should be allowed. About 15 percent believed that limits should be four or more dogs per person (NAU 2002b, 29–30).

Many people responding to the ANPR reported that they enjoyed visiting GGNRA sites with their dogs off leash. They cited the importance of adequate exercise opportunities for their dogs as well as the importance of social connections with other dog walkers as reasons for the necessity of off-leash recreation (NAU 2002a, 16–18). For example, "Just like healthy human beings, dogs need exercise that they cannot adequately get walking on a leash" (NAU 2002a, 16). Most of the organized groups that support off-leash dog recreation at GGNRA sites advocate responsible dog ownership, which includes picking up dog waste, discouraging dogs from digging holes or chasing/harassing wildlife, and leashing aggressive dogs.

Site-Specific Visitation Results and Dog-related Incidents at GGNRA

As stated previously, many visitors report that they enjoy visiting GGNRA sites with their dogs. However, dog-related incidents do occur at GGNRA and are collected by two independent NPS law enforcement divisions (the U.S. Park Police and NPS rangers). Incident reports are written by either U.S. Park Police or NPS rangers when visitors violate park regulations. Dog-related incidents were compiled for GGNRA using the criminal incident reports written by both divisions. A detailed discussion of these methods and incidents is included at the beginning of this chapter. This section provides a more detailed site-specific discussion of dog-related incidents. For each GGNRA site described in this section below, the tables identify the number and type of dog-related incidents that occurred from 2008 through 2011 and from 2012 through 2016 using the available law enforcement reports (tables 12 through 30).

Dog-related incidents from 2008 to 2011 include violations of the leash law, hazardous conditions (includes a dog bite, dog attack, or dog rescue), unattended pet violation, failure to pick up pet excrement, possessing a pet in a closed area, violation of a closed area, wildlife disturbance, and vegetation damage. A leash violation can include having a dog off leash in a leash-only area, including violations of 36 CFR 7.97(d), which describe seasonal dog walking restrictions (on leash only) for western snowy plovers in the SPPA at Ocean Beach and in the WPA at Crissy Field. Possessing a pet in a closed area is described in 36 CFR 2.15 (a)(1) as possessing a pet in a public building, public transportation vehicle, or location designated as a swimming beach, or any structure or area closed by the superintendent to the possession of pets. This regulation does not apply to service dogs. Violation of a closed area (36 CFR 1.5 (f)) applies to both humans and pets and is described as violating a closure, designation, use or activity restriction or condition, schedule of visiting hours, or public use limit. U.S. Park Police and NPS rangers appear to cite these regulations interchangeably on incident reports, and therefore, these incidents were kept separate and not compiled in tables 12 through 30. For example, Stinson Beach is open to the public, but closed to pets. In 2010, two separate people in two separate instances were issued citations for having dogs on the beach. One incident (2010, Incident Report # 1003935) resulted in a verbal warning, citing 36 CFR 1.5(f), violation of a closed area. The other incident (2010, Incident Report # 1009278) resulted in a citation for violation of 36 CFR 2.15(a)(1), possessing a pet in a closed area. Vegetation damage is described in section 36 CFR 2.1 (a) (1) (ii)) and the following is applicable to vegetation and soils and prohibited: possessing, destroying, injuring, defacing, removing, digging, or disturbing from its natural state: plants or the parts or products thereof. Wildlife disturbance is described in section 36 CFR 2.2 (a) (2) and the following is prohibited: feeding, touching, teasing, frightening or intentional disturbing of wildlife nesting, breeding or other activities. At GGNRA, it is required by law for people to clean up dog fecal matter. Violations have been written for park visitors at GGNRA who have not cleaned up after their dogs, under 36 CFR 2.34(a) (4), creating a "physically offensive condition" and 36 CFR 2.15 (a) (5), "failing to comply with pet excrement disposal conditions established by the superintendent."

Dog-related incidents from 2012 through 2016 were categorized differently than those from 2008 through 2011 as a result of a NPS servicewide change in law enforcement reporting and tracking software and its implementation. An animal complaint can encompass different situations including complaints about barking dogs, dogs fighting, dogs left unattended, inappropriate contact with dogs, aggressive dogs, and lost dogs. Dog bites include a reported injury from a dog. Non-compliant dog walking violations is similar to violation of a closed area described above. In addition, leash violations and wildlife disturbance violations are the same as described above.

In addition to a discussion of dog-related incidents, this section provides results of site-specific visitation surveys, when applicable, including the visitor count studies conducted in 2008 for the Cosco Busan Oil Spill Natural Resource Damage Assessment (USFWS 2009b), visitor count studies conducted in 2011 as part of the *Assessment of Visitor Activities at Six Sites Within Golden Gate National Recreation Area*

(IEC 2011), and results of the most popular sites (generally top 10 sites) recorded in the 2012 *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a).

Stinson Beach

On-leash dog walking is allowed in parking lots and picnic areas, but not on Stinson Beach, because it is a designated swimming beach (which is closed per the CFR and the GGNRA Compendium (NPS 2008b, 20)). There is an adjacent beach, owned by Marin County, Upton Beach, that allows on-leash dog walking. Allowing on-leash dog walking at the adjacent Upton Beach may lead to confusion in the GGNRA-owned portion of Stinson Beach that does not allow dogs. Visitor use at Stinson Beach is high on nice weekends especially during the summer and fall when swimming is popular, and dog use in the picnic and parking lot areas is low to high and varies seasonally (table 10). During the *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a), when dog walkers were asked which GGNRA sites they visited most frequently, 2.2 percent indicated Stinson Beach, ranking it as the seventh most frequently visited site by dog walkers. (NPS 2012a, Appendix A: 6). Stinson Beach also tied as the seventh most frequently visited site by non dog walkers during that survey (3.5 percent) (NPS 2012a, Appendix A: 69).

Compliance was relatively low on the beach between 2008 and 2011, with over 70 warnings/citations given to dog owners for having a dog in an area closed to dogs from 2008 through 2011 (table 12a). The hazardous condition reported in 2009 was a dog bite/attack (table C-1). Compliance is considered good in the parking lots and picnic areas, with only 4 off-leash violations recorded (table 12a). From 2012 through 2016, a total of 61 dog-related incidents occurred within this five-year span, the majority of which were recorded violations of the leash law (36 incidents) (table 12b).

TABLE 12A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT STINSON BEACH, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Possessing Pet in Closed Area*	53	9	3	6	**71**
Off-leash Violation	3	0	1	0	**4**
Violation of Closed Area*	0	3	1	1	**5**
Hazardous Condition	0	1	0	0	**1**
Unattended Pet	0	0	1	1	**2**
Pet Excrement	0	1	0	0	**1**
Other	0	0	0	1	**1**
Total	**56**	**14**	**6**	**9**	**85**

* The closed area resulting in violations at this site is the NPS section of the beach, which is closed to pets but adjacent to Upton Beach, which allows on-leash dog walking. U.S. Park Police and NPS rangers appear to cite these regulations interchangeably on incident reports, and therefore, these incidents were kept separate and not compiled in this table.

TABLE 12B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT STINSON BEACH, 2012–2016, EXCLUDING LIFEGUARD WARNINGS FOR DOGS (2012–2013 AVERAGE OF 1,578 WARNINGS)

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	0	1	1	3	2	**7**
Dog Bite	0	0	1	1	0	**2**
Dog Walker in Closed Area	0	0	1	0	4	**5**
Violation of Leash Law	2	3	7	7	17	**36**
Dog/Wildlife Interaction	0	0	0	0	0	**0**
Resource Violation	10	1	0	0	0	**11**
Total	**12**	**5**	**10**	**11**	**23**	**61**

Lifeguard statistics, including warnings to visitors, are typically reported annually into a national database of the United States Lifesaving Association (USLA 2016). GGNRA lifeguards are deployed at Stinson Beach, and usually complete daily logs that are rolled up into these reports annually after the end of the calendar year. As part of those statistics, one item in their annual report identifies the approximate number of warnings issued to visitors due to rule violations (fire, dog, etc.) surf cautions, etc. Lifeguard warnings at Stinson Beach related to dog management issues is reported as typically 60 percent of total warnings for any given year. Most of the dog related warnings are typically for on and off-leash dogs on the NPS swimming beach where they are prohibited and off-leash in parking lots where on-leash is required. In 2012, 2,500 total warnings were given by lifeguards, with approximately 1,500 of them being dog related. In 2013, 1,656 total warnings were issued, with 994 being dog related and in 2014 2,000 total warnings were issued with 1,200 being dog related. Warnings were not reported in 2015 and 2016 data is not yet available. NPS realizes that these percentages are estimations; however, it supports the need for dog management at GGNRA.

Homestead Valley

On-leash dog walking or dog walking under voice control is currently allowed throughout the site. This site is primarily used by local Mill Valley residents; use by visitors other than those walking dogs is relatively low (table 10). A few commercial dog walkers have been seen using this site. There were no dog-related incidents documented recorded from 2008 through 2016 at Homestead Valley.

Alta Trail, Orchard Fire Road, and Pacheco Fire Road

The 1979 Pet Policy allowed on-leash dog walking or dog walking under voice control between Marin City and Oakwood Valley but did not specify which trails or fire roads were the intended routes. Dogs are allowed under voice control or on leash from Marin City to Oakwood Valley. The Alta Trail, on the ridge above Marin City, connects to the Oakwood Valley Trail and can be accessed either from the end of Donahue Street or from the Orchard or Pacheco fire roads. Local visitor use of the Alta Trail by hikers, runners, and bikers is low to moderate, as access and parking are readily available off Highway 101 at the end of Donahue Street (table 10). The Alta Trail has very high use by commercial dog walkers, and park staff estimate that there are usually 5 to 12 dogs per commercial walker, resulting in 30 to 50 dogs at a time in the area during periods of heaviest use. Dogs walked by both commercial dog walkers and private individuals are generally not on a leash.

There were 8 violations for having a dog in a closed area and 5 leash law violations recorded from 2008 through 2011 (table 13a). Park personnel have indicated dog/coyote conflicts occur in this area. The high concentration of dog walkers may discourage some other users in this area. There were 19 dog-related incidents recorded from 2012 to 2016, 12 of which were dog walkers in closed areas (table 13b).

TABLE 13A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT ALTA TRAIL, ORCHARD FIRE ROAD, AND PACHECO FIRE ROAD, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Possessing Pet in Closed Area*	3	1	1	3	**8**
Off-leash Violation	2	0	1	2	**5**
Total	**5**	**1**	**2**	**5**	**13**

* The closed areas resulting in violations at this site are portions of the Alta Trail, Oakwood Valley Trail, and Bobcat Trail, which are closed to pets.

TABLE 13B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS ALTA TRAIL, ORCHARD FIRE ROAD, AND PACHECO FIRE ROAD, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	1	0	1	1	0	**3**
Dog Bite	0	0	0	0	0	**0**
Dog Walker in Closed Area	0	0	7	1	4	**12**
Violation of Leash Law	3	0	0	0	0	**3**
Dog/Wildlife Interaction	0	0	0	0	0	**0**
Resource Violation	1	0	0	0	0	**1**
Total	**5**	**0**	**8**	**2**	**4**	**19**

Oakwood Valley

The 1979 Pet Policy allowed on-leash dog walking or dog walking under voice control on Oakwood Valley Fire Road and on the Oakwood Valley Trail from the junction with Oakwood Valley Fire Road to the junction with the Alta Trail. On-leash dog walking is permitted on the Oakwood Valley Trail from the trailhead to the junction with Oakwood Valley Fire Road. Visitor use in this area by hikers, runners, bikers, and equestrian riders is considered moderate (table 10). Park staff have observed that some local dog walkers allow their dogs to be under voice control as soon as they exit their vehicles along Tennessee Valley Road, in the large, open, grassy meadow at the start of the Oakwood Valley Trail, and along the trail itself, as well as on an open, grassy hillside east of the Oakwood Valley Trail. Oakwood Valley receives use by local residents, with the majority of use occurring in the morning. Most visitors are private individuals, rather than commercial dog walkers. Park personnel have indicated dog/coyote conflicts occur in this area. From 2008 through 2016, only one incident was reported for possessing a pet in a closed area (tables 14a and 14b). A total of 8 dog-related incidents were reported from 2012 through 2016 (table 14b).

TABLE 14A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT OAKWOOD VALLEY, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Possessing Pet in Closed Area*	1	0	0	0	**1**
Total	**1**	**0**	**0**	**0**	**1**

* The closed area resulting in a violation at this site is the asphalt road into Tennessee Valley, which is closed to pets.

TABLE 14B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT OAKWOOD VALLEY, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	0	0	1	0	1	**2**
Dog Bite	0	0	0	0	0	**0**
Dog Walker in Closed Area	0	0	2	0	1	**3**
Violation of Leash Law	0	0	0	1	1	**2**
Dog/Wildlife Interaction	0	0	0	0	0	**0**
Resource Violation	1	0	0	0	0	**1**
Total	**1**	**0**	**3**	**1**	**3**	**8**

Muir Beach

On-leash dog walking or dog walking under voice control is currently allowed on Muir Beach per the 1979 Pet Policy, including the path to the beach. Park staff have observed that some dogs owned by residents at Muir Beach are not kept in yards or homes, but instead roam off leash along the beach or in the lagoon, creek, or upland areas. Muir Beach has a post-and-cable fence along the beach side of lower Redwood Creek and lagoon that is intended to discourage visitors from accessing the water; however, the fencing does not physically exclude dogs or visitors from the area. Warnings and citations have been issued to dog owners for dogs in areas closed to pets. Few commercial dog walkers use Muir Beach. A 2003 visitor experience and resource protection study at Muir Beach and Muir Woods found that 21 percent of visitors walked their dogs at Muir Beach. When asked what they enjoyed least about the site, 22 percent cited the wind and foggy weather, while about 9 percent cited dog conflicts as the least enjoyable aspect of the site (NPS 2003b, 14).

Muir Beach is heavily used by visitors (beach-goers and hikers) on nice days or weekends (table 10). During the August 2011 visitor surveys, 79 percent of visitors at Muir Beach were general beach visitors and were placed in the catch-all “Other” category. Other activities observed at Muir Beach included running/walking (10 percent), dog walking (6 percent), picnicking (3 percent), surfing (2 percent), and angling (1 percent) (table 11) (IEC 2011, 9-10). Dog walking was relatively consistent on the observed day; 5 percent of dog walkers were recorded on a weekday and 6 percent were recorded on the weekend (IEC 2011, 13). It is important to note visitation estimates only include visitors who spent time on the beach. They do not include visitors who picnicked in the parking lot area or hikers who did not visit the beach but who used the Muir Beach parking lot to access the Coastal Trail. During two days of the survey (August 18-19), there was a children’s surfing camp that took place at Muir Beach (IEC 2011, 22). During the *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a), when dog walkers were asked

which GGNRA sites they visited most frequently, 1.9 percent indicated Muir Beach, which tied with two other sites as the eigth most frequently visited site by dog walkers. (NPS 2012a, Appendix A: 6). Muir Beach also tied as the seventh most frequently visited site by non dog walkers during that survey (3.5 percent) (NPS 2012a, Appendix A: 69).

A total of 24 dog-related violations were reported at Muir Beach from 2008 through 2011 (table 15a). The most common violations were for having dogs off leash (9 violations) and having dogs within closed areas (4 violations) (table 15a). There were also 2 violations for dog bites/attacks (hazardous condition) (table 15a). Between 2012 and 2016, a total of 18 dog-related incidents were reported, 10 of which were for having dogs off leash (table 15b).

TABLE 15A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT MUIR BEACH, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Hazardous Condition	1	0	1	0	**2**
Off-leash Violation	1	6	1	1	**9**
Pet Excrement	1	0	0	0	**1**
Violation of Closed Area*	1	0	0	0	**1**
Possessing Pet in Closed Area*	0	2	3	0	**5**
General Pet Violations	0	1	0	0	**1**
Wildlife Disturbance	0	0	1	0	**1**
Other	0	0	2	2	**4**
Total	**4**	**9**	**8**	**3**	**24**

* The closed areas resulting in violations at this site include Redwood Creek and Muir Beach Lagoon (closed to humans and pets) and Coastal Trail and Bobcat Trail (closed to pets). U.S. Park Police and NPS rangers appear to cite these regulations interchangeably on incident reports, and therefore, these incidents were kept separate and not compiled in this table.

TABLE 15B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT MUIR BEACH, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	0	0	0	4	2	**6**
Dog Bite	0	0	0	0	1	**1**
Dog Walker in Closed Area	0	0	0	0	0	**0**
Violation of Leash Law	1	0	0	2	7	**10**
Dog/Wildlife Interaction	0	0	0	0	0	**0**
Resource Violation	0	0	0	0	1	**1**
Total	**1**	**0**	**0**	**6**	**11**	**18**

Rodeo Beach/ South Rodeo Beach

Currently, dog walking on leash or under voice control is allowed on Rodeo Beach and South Rodeo Beach; on-leash dog walking is permitted on the bridge connecting to the beach and the trail connecting to South Rodeo Beach. Rodeo Lagoon is closed to people and dogs for overall natural resource protection including the federally endangered tidewater goby, the California brown pelican, sensitive waterbird and shorebird habitat, as well as water quality. Although this area is closed, dogs are frequently seen in Rodeo Lagoon. One citation was issued for a dog in a closed area and four for dogs disturbing wildlife in 2010 (table 16a). Because people and dogs regularly walk along the western edge of the lagoon, the NPS is planning to construct a post-and-cable fence along the beach side of Rodeo Lagoon to discourage visitors and pets from accessing the lagoon and to protect birds roosting near the shoreline of the lagoon, although it would not physically exclude dogs from this area.

During the November 2008 visitor surveys, general beach visitors represented 39 percent of all individuals observed (IEC 2011, 10). After general beach visitors, the next two largest groups of visitors were classified as runners/walkers (18 percent) or visiting the beach with a school group (19 percent). Other popular activities observed included dog walking (8 percent), picnicking (7 percent), surfing (7 percent), and biking (2 percent) (table 11). School groups visited Rodeo Beach primarily on the weekdays (IEC 2011, 9-10). The percentage of dog walkers was slightly higher on the weekend (9 percent of visitors) when compared to the weekday results (7 percent) (IEC 2011, 13). Schoolchildren use the beach as part of the education programs associated with Nature Bridge and the Young Men's Christian Association. During the *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a), when dog walkers were asked which GGNRA sites they visited most frequently, 1.9 percent indicated Rodeo Beach, which tied with two other sites as the eigth most frequently visited site by dog walkers. (NPS 2012a, Appendix A: 6).

Even though there is a low to moderate level of use by visitors with dogs at this site, the length of Rodeo Beach disperses the concentration of dog walkers, allowing them to avoid other users; therefore, incidents among visitors and dogs are relatively uncommon: three dog bite/attack incidents were recording from 2008 through 2011 (table 16a). A total of 30 dog-related incidents were reported between 2008 and 2011 with 9 off-leash violations and 7 incidents involving pets within closed areas (table 16a). In 2012 through 2016, 26 total dog-related incidents occurred at Rodeo Beach and South Rodeo Beach (table 16b). Half of the incidents reported during this five-year time span were animal complaints (table 16b).

TABLE 16A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT RODEO BEACH / SOUTH RODEO BEACH, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Off-leash Violation	3	2	3	1	**9**
Possessing Pet in Closed Area*	1	0	1	5	**7**
Hazardous Condition	0	0	1	3	**4**
Wildlife Disturbance	0	0	1	1	**2**
Pet Excrement	0	0	0	1	**1**
Other	1	2	1	3	**7**
Total	**5**	**4**	**7**	**14**	**30**

* The closed area resulting in a violation at this site is Rodeo Lagoon, which is closed to humans and pets.

TABLE 16B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT RODEO BEACH / SOUTH RODEO BEACH, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	1	2	3	4	3	**13**
Dog Bite	2	0	0	1	0	**3**
Dog Walker in Closed Area	0	1	0	0	0	**1**
Violation of Leash Law	2	2	2	3	0	**9**
Dog/Wildlife Interaction	0	0	0	0	0	**0**
Resource Violation	0	0	0	0	0	**0**
Total	**5**	**5**	**5**	**8**	**3**	**26**

Marin Headlands Trails

The 1979 Pet Policy designated several sections of Marin Headlands trails (Coastal Trail, the Wolf Ridge and Miwok Trail Loop, the Old Bunker Fire Road Loop, and the Coastal Trail from the Golden Gate Bridge to Hill 88, including the Lagoon Loop Trail) as available for on-leash dog walking or dog walking under voice control. Dog walking under voice control is permitted on the Coastal Trail from Hill 88 to Muir Beach, the Batteries Loop Trail, the South Rodeo Beach Trail, the North Miwok Trail, and Country View Road. Dog walking use is low to moderate on these trails (table 10). Park staff estimate that the Coastal Trail is used by about 10 dog walking visitors per week, and use of the Miwok Trail section varies from 1 dog walking visitor per day on weekdays to 25 per day on the weekend.

During the *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a), when dog walkers were asked which GGNRA sites they visited most frequently, 2.5 percent indicated Marin Headlands Trails, making it the sixth most frequently visited site by dog walkers. (NPS 2012a, Appendix A: 6). Marin Headlands Trails was indicated as the third most frequently visited site by non dog walkers during that survey (9 percent) (NPS 2012a, Appendix A: 69).

The trails in the Marin Headlands are regularly patrolled because much of the site is relatively easily accessed by law enforcement staff. Compliance with the dog regulations on the trails in the Marin Headlands between 2008 and 2011 was low. A total of 269 incidents were reported. The majority of the incidents (195) were for having a dog within an area closed to dogs. A total of 31 off-leash violations were also reported at the site (table 17a). The 3 incidents reported as hazardous conditions included dog bites/attacks (table 17a). A total of 232 dog-related incidents were reported between 2012 and 2016, the majority of which were violations of the leash law (table 17b). Other commonly reported incidents included dog walkers in closed areas, animal complaints, and resource violations (table 17b).

TABLE 17A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT MARIN HEADLANDS TRAILS, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Possessing Pet in Closed Area*	46	66	26	57	**195**
Off-leash Violation	9	11	4	7	**31**
Violation of Closed Area*	5	0	4	4	**13**
Hazardous Condition	2	1	0	0	**3**
Pet Excrement	0	1	0	0	**1**
Wildlife Disturbance	0	1	0	0	**1**
Unattended Pet	0	0	1	0	**1**
Other	3	5	5	11	**24**
Total	**65**	**85**	**40**	**79**	**269**

* The closed areas resulting in a violation at this site are closed to pets and include Bicentennial Campground, Bobcat Trail, Coastal Trail, Coyote Ridge Trail, Fox Trail, Haypress Campground, Kirby Cove, Marincello Trail, Point Bonita Lighthouse Trail, Rodeo Valley Trail, Tennessee Valley Beach, Tennessee Valley Stables, Tennessee Valley Trail, and Wolfback Ridge. U.S. Park Police and NPS rangers appear to cite these regulations interchangeably on incident reports, and therefore, these incidents were kept separate and not compiled in this table.

TABLE 17B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT MARIN HEADLANDS TRAILS, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	0	7	2	19	12	**40**
Dog Bite	0	0	1	0	0	**1**
Dog Walker in Closed Area	5	11	28	4	8	**56**
Violation of Leash Law	8	6	31	33	20	**98**
Dog/Wildlife Interaction	0	0	1	0	0	**1**
Resource Violation	28	8	0	0	0	**36**
Total	**41**	**32**	**63**	**56**	**40**	**232**

Fort Baker

Currently, on-leash dog walking is allowed in the Fort Baker area except for the pier and the Chapel Trail. Visitor use at Fort Baker is considered moderate (table 10). Few commercial dog walkers currently use Fort Baker.

Monitoring by law enforcement staff is extensive at Fort Baker, yet park staff estimate that about half the visitors with dogs are in violation of regulations. From 2008 through 2011, a total of 60 dog-related incidents were reported. Of these, 52 incidents were for having dogs off leash (table 18a). Dogs have been observed off leash by park staff on the parade ground, Drown Fire Road, the Battery Yates area, and behind the Bay Area Discovery Museum. A total of 55 dog related incidents occurred from 2012 through

2016 (table 18b). Commonly reported incidents included violations of the leash law, and animal complaints.

TABLE 18A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT FORT BAKER, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Off-leash Violation	12	21	9	10	**52**
Possessing Pet in Closed Area*	2	1	0	1	**4**
Hazardous Condition	0	0	1	0	**1**
Other	0	1	0	2	**3**
Total	**14**	**23**	**10**	**13**	**60**

* The closed areas resulting in violations at this site include Drown Fire Road, McReynolds Road, and Fort Baker Pier, which are closed to pets.

TABLE 18B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT FORT BAKER, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	2	1	1	3	9	**16**
Dog Bite	1	0	1	2	1	**5**
Dog Walker in Closed Area	0	0	0	1	0	**1**
Violation of Leash Law	15	4	2	6	2	**29**
Dog/Wildlife Interaction	1	0	0	0	0	**1**
Resource Violation	3	0	0	0	0	**3**
Total	**22**	**5**	**4**	**12**	**12**	**55**

Upper and Lower Fort Mason

Currently, on-leash dog walking is required at Fort Mason, but park staff have observed that many dog walkers allow their pets off leash. The park's headquarters is located at Fort Mason and this site receives moderate to high visitor use by walkers, bikers, runners, sightseers, and dog walkers (table 10). From April 1, 2016 through June 30, 2016, a total of 208,488 bicycles were counted along Fort Mason Street. The average number of bikes per day was 2,291. A total of 293,219 bicycles were recorded along the Great Meadow path during this period with an average of 3,222 bikes per day (GGNRA 2016, 7, 8). In addition, many commercial dog walkers walk to the area from the local neighborhoods. During the *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a), when asked which GGNRA sites they visited most frequently, 6 percent (10 people) of non-dog walkers indicated Fort Mason, making it the second most frequently visited site by that group (NPS 2012a, 29). The paved, multi-use trail along the waterfront (connects San Francisco Maritime National Historical Park to Marina Green through Fort Mason) attracts visitors and cyclists as well as bicycle commuters. The Great Lawn Meadow at Fort Mason is also used for large special events, such as the San Francisco Blues Festival, during which dog walking is restricted to the perimeter of the area.

Compliance with dog walking regulations at Fort Mason was considered low from 2008 through 2011. A total of 140 dog-related incidents were reported with 129 of these for having dogs off leash (table 19a). A total of six incidents were reported involving dog bites/attacks (hazardous condition) (table 19a). The total number of reported dog-related incidents is 61 from 2012 through 2016 (table 19b). Of the 61 incidents, 36 were reported leash law violations, 11 were for resource violations, 7 were animal complaints, 5 were for walking dogs in closed areas, and 2 were reported dog bites (table 19b).

TABLE 19A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT UPPER AND LOWER FORT MASON, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Off-leash Violation	6	43	54	26	**129**
Hazardous Condition	1	3	1	1	**6**
General Pet Violations	0	5	1	0	**6**
Other	0	2	2	0	**4**
Total	**7**	**53**	**58**	**27**	**145**

TABLE 19B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT UPPER AND LOWER FORT MASON, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	0	1	1	3	2	**7**
Dog Bite	0	0	1	1	0	**2**
Dog Walker in Closed Area	0	0	1	0	4	**5**
Violation of Leash Law	2	3	7	7	17	**36**
Dog/Wildlife Interaction	0	0	0	0	0	**0**
Resource Violation	10	1	0	0	0	**11**
Total	**12**	**5**	**10**	**11**	**23**	**61**

Crissy Field

On-leash dog walking or dog walking under voice control is allowed throughout Crissy Field except for the fenced areas and the WPA, although dog walking under voice control is permitted in the Crissy Field WPA from May 15 to July 1; for the remainder of the year a seasonal leash restriction is in effect in the WPA to protect the federally threatened western snowy plover. The NPS recently installed new fencing, gates, and signage at the eastern and western boundary of the WPA to better demarcate where dog walking restrictions start. Gates and signage were also installed at trail entry points to the WPA.

People visit Crissy Field as early as 4:00 a.m. and there is moderate to high visitor use throughout the day. Visitors include individual and commercial dog walkers, bikers, pedestrians, rollerbladers, runners, wind surfers, kite boarders, and sightseers (table 10). A total of 48,020 bicycles were recorded along the Crissy Field Promenade between April 1, 2016, and June 30, 2016, with an average of 528 bikes per day (GGNRA 2016, 6). Within the WPA, visitor use is low to moderate for walkers, beachgoers, and visitors who walk dogs. Park staff estimates that throughout Crissy Field, there are generally 5 to 10 commercial dog walkers per day (fewer on weekends than weekdays), and typically 3 present with between 4 and 6

dogs each at any given time of the day. These dogs are often off leash, as are many of the dogs walked by dog owners.

As stated previously, park visitation at Crissy Field was analyzed more fully as a result of surveys conducted in November 2008. During these surveys, activities were only summarized for the subset of visitors who access the site via the trail/promenade entrances (IEC 2011, 23). Observers stationed at the parking lot exit lanes focused only on counting visitors. During this survey, some visitors at Crissy Field may have been counted twice if they parked at the main parking lot, walked or ran to another destination outside the park, and then returned to their vehicle at the parking lot. These visitors would be counted on a path or promenade and in the parking lot. Visitation estimates also did not include visitors who only spent time on the Crissy airfield or who remained along Mason Street Bike Path without accessing the Promenade or waterfront area (IEC 2011, 23).

Results of the 2008 survey at Crissy Field indicate that nearly all visitors observed at the trail/promenade entrances were runners/walkers (72 percent), bikers (21 percent), or dog walkers (6 percent) as shown in table 11. These results exclude visitors leaving Crissy Field via the two main parking lots, visitors on the Mason Street Bike Path, and visitors on the airfield (IEC 2011, 9-10). The proportion of dog walkers was larger on weekdays (31 percent) when compared to the weekend (18 percent) (IEC 2011, 13). Interviews were also conducted at the East Beach parking lot, West Bluff parking lot, and the eastern end of the Promenade to obtain more detailed information. Of the 484 interviews completed, 32 percent of people interviewed had dogs with them. The East Beach lot was the most popular for dog walkers (54 percent of the respondents had dogs), followed by visitors at West Bluff (32 percent had dogs), and the east end of the promenade (21 percent had dogs). Approximately half of the visitors indicated that their dog went into the water at the beach, with the majority of these visitors located at East Beach and the West Bluff. With regard to visitor destinations, 86 percent of respondents visited the Promenade, 48 percent went on the sand, and 20 percent visited Torpedo Wharf (IEC 2011, 11-12).

During the *GGNRA Dog Walking Satisfaction Visitor Study* conducted in 2012, when dog walkers were asked which GGNRA sites they visited most frequently, 21 percent indicated Crissy Field, making it the second most frequently visited site by dog walkers. (NPS 2012a, Appendix A: 6). Crissy Field was also indicated as the most frequently visited site by non dog walkers during that same survey (27 percent) (NPS 2012a, 27).

A visitor survey documenting visitor experience for Crissy Field, Ocean Beach, and the Presidio (including some sites in Area B, which are outside of the analysis of this final plan/EIS) was conducted in 2008 in two phases. The first phase of the survey found that at Crissy Field, 13 percent of respondents noted dog walking as their primary reason for their visit, the third most cited reason (Tierney et al. 2009, 52). The second phase of the survey (follow-up telephone survey with the same visitors), found that at Crissy Field, 13 percent of respondents mentioned off-leash dogs as a moderate or serious problem associated with their park experience (Nakagawa, Rogers, and Adcock et al. 2010, 48).

Compliance with the dog walking regulation was low at Crissy Field from 2008 through 2011. A total of 510 incidents were reported from 2008 through 2011 (table 20a). The most common incident at Crissy Field is for having off-leash pets within the WPA (283 reported incidents) during the period (July 1–May 15) when dogs must be leashed. Other common incidents include having a dog within a closed area and for having dogs off leash. Particularly on nice days, the moderate to high visitor use and variety of visitor experiences have resulted in visitor incidents related to dogs, including intimidation, dogs knocking over people, dog-on-dog fights, and dogs biting people. A total of 17 hazardous conditions which include dog bites/attacks were reported from 2008 through 2011 (table 20a). Park maintenance activities are also demanding at this site, including issues related to vandalism of signs as well as dog-related issues such as removal of dog waste and urination on trash cans.

From 2012 through 2016, the total number of dog-related incidents was 98 with the majority of the incidents (39) were animal complaints (table 20b). Leash law and resource violations were also commonly reported incidents (table 20b).

TABLE 20A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT CRISSY FIELD, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Violation of Leash Restriction in WPA*	65	158	27	33	**283**
Violation of Closed Area**	58	0	0	0	**58**
Off-leash Violation	44	6	5	10	**65**
Possessing Pet in Closed Area**	13	2	0	0	**15**
Hazardous Condition	2	5	5	5	**17**
Pet Excrement	0	2	0	1	**3**
Wildlife Disturbance	0	1	0	1	**2**
Unattended Pet	0	0	0	1	**1**
Other	9	25	7	25	**66**
Total	**191**	**199**	**44**	**76**	**510**

* This violation is for disobeying the seasonal leash restriction (July 1 through May 15).

** The closed areas resulting in violations at this site include the lagoon (closed to humans and pets) and the WPA (seasonally closed to off-leash dog walking). U.S. Park Police and NPS rangers appear to cite these regulations interchangeably on incident reports, and therefore, these incidents were kept separate and not compiled in this table.

TABLE 20B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT CRISSY FIELD, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	3	5	15	11	1	**35**
Dog Bite	0	4	4	1	2	**11**
Dog Walker in Closed Area	1	0	4	0	3	**8**
Violation of Leash Law	5	2	12	4	6	**29**
Dog/Wildlife Interaction	0	1	0	1	1	**3**
Resource Violation	11	0	0	0	1	**12**
Total	**20**	**12**	**35**	**17**	**14**	**98**

Fort Point

Currently, on-leash dog walking is allowed on the Fort Point Promenade, the Battery East Trail, and Andrews Road. The Fort Point area, particularly the promenade, can receive moderate to high visitor use by runners, bikers, and walkers. A total of 55,902 bicycles were recorded along the Bay Trail between April 1, 2016 and June 30, 2016 with an average of 614 bikes per day (GGNRA 2016, 5).

From 2008 through 2011, a total of 23 dog-related incidents were reported (table 21a). The majority of incidents reported were for having dogs off leash (15 incidents) (table 21a). Visitor incidents with dogs occur on the promenade along the entrance road because joggers, cyclists, and walkers share this space with dog walking visitors. Of the hazardous conditions reported in 2010, one incident was for a dog bite and one incident was for a dog water rescue (table 21a). The total number of dog-related incidents from 2012 through 2016 was 61 (table 21b). The majority of incidents (36) were leash law violations (table 21b).

TABLE 21A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT FORT POINT, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Off-leash Violation	11	1	3	0	**15**
Possessing Pet in Closed Area*	0	2	0	1	**3**
Hazardous Condition	0	0	2	0	**2**
Other	0	0	2	1	**3**
Total	**11**	**3**	**7**	**2**	**23**

* The closed area resulting in violations at this site includes the Fort Point Pier, which is closed to pets.

TABLE 21B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT FORT POINT, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	0	1	1	3	2	**7**
Dog Bite	0	0	1	1	0	**2**
Dog Walker in Closed Area	0	0	1	0	4	**5**
Violation of Leash Law	2	3	7	7	17	**36**
Dog/Wildlife Interaction	0	0	0	0	0	**0**
Resource Violation	10	1	0	0	0	**11**
Total	**12**	**5**	**10**	**11**	**23**	**61**

Baker Beach and Bluffs to Golden Gate Bridge

On-leash dog walking or dog walking under voice control is allowed on Baker Beach north of Lobos Creek. On-leash dog walking is allowed on all trails except the Batteries to Bluffs Trail.

Baker Beach receives low to moderate visitor use by dog walkers and low to moderate visitor use by beachgoers and picnickers on weekends and holidays (table 10). During the November 2008 visitor surveys at Baker Beach, observers counted departing visitors in two locations: at the Gibson Road entrance to the main parking areas and at the Lincoln Boulevard entrance to the Dune Trail. At the Gibson Road location, observers simply counted visitors and did not classify their activities because visitors were already in their vehicles as they were being counted, making it difficult to determine what activity they had been pursuing during their visit (IEC 2011, 6). The sand ladder entrance is a relatively minor pedestrian entrance to the beach and only accounted for 12 percent of the total visitation during the survey. Visitors were not counted at the 25th Avenue entrance; therefore overall visitation at Baker Beach

may be underestimated (IEC 2011, 23). Since the sand ladder is a pedestrian entrance, the majority of visitors were classified as runners/walkers (87 percent). Dog walking (7 percent), biking (3 percent), and picnicking (2 percent) were also popular at the site (table 11) (IEC 2011, 9-10). The proportion of dog walkers on weekdays (8 percent) is slightly higher when compared to the weekend (6 percent) (IEC 2011, 13). During the *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a), when dog walkers were asked which GGNRA sites they visited most frequently, 1.9 percent indicated Baker Beach, which tied with two other sites as the eigth most frequently visited site by dog walkers (NPS 2012a, Appendix A: 6). When non dog walkers were asked which GGNRA sites they visited most frequently, 2.5 percent indicated Baker Beach, making it the tenth most popular site with non-dog walkers in the survey (NPS 2012a, 29).

At Baker Beach, a total of 86 dog-related incidents were reported from 2008 through 2011. A total of 48 incidents were for having a dog off leash (table 22a). Incidents between visitors and dogs sometimes occur; in 2010 and 2011 a total of 6 hazardous condition incidents were reported which included dog bites/attacks (table 22a). A total of 49 dog-related incidents were reported from 2012 to 2016 (table 22b). A total of 18 incidents were recorded as animal complaints and a combined total of 27 were recorded for dog bites, leash law violations, and dog-walking in closed areas (table 22b).

TABLE 22A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT BAKER BEACH, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Off-leash Violation	5	36	4	3	**48**
Possessing Pet in Closed Area*	2	12	5	0	**19**
Unattended Pet	1	0	0	0	**1**
Pet Excrement	0	1	0	0	**1**
Hazardous Condition	0	0	3	3	**6**
Violation of Closed Area*	0	0	0	1	**1**
Other	0	3	2	5	**10**
Total	**8**	**52**	**14**	**12**	**86**

* The closed areas resulting in violations at this site include the Batteries to Bluffs Trail and Marshall Beach, which are closed to pets. U.S. Park Police and NPS rangers appear to cite these regulations interchangeably on incident reports, and therefore, these incidents were kept separate and not compiled in this table.

TABLE 22B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT BAKER BEACH, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	3	1	7	7	0	**18**
Dog Bite	2	3	0	4	0	**9**
Dog Walker in Closed Area	0	1	6	1	2	**10**
Violation of Leash Law	2	0	2	3	1	**8**
Dog/Wildlife Interaction	0	1	0	1	0	**2**
Resource Violation	0	2	0	0	0	**2**
Total	**7**	**8**	**15**	**16**	**3**	**49**

Fort Miley

On-leash dog walking or dog walking under voice control is permitted at both East and West Fort Miley. This area has low use by dog walkers, but moderate use by picnickers (table 10). This site is mostly used by local residents, and no dog-related incidents were reported from 2008 through 2016.

Lands End

Lands End
Credit: NPS

Currently, both on-leash dog walking and dog walking under voice control are allowed at the Lands End site. Since the recent area restorations and upgrades to the Lands End Coastal Trail, visitor use has increased significantly. This site is considered to have low to moderate visitor use by hikers, pedestrians, bikers, and dog walkers (table 10). A total of 195,337 bicycles were recorded along the Coastal Trail between April 1, 2016 and June 30, 2016 with an average of 2,147 bikes per day (GGNRA 2016, 10). Because of safety concerns (steep cliffs, poison-oak, ticks, etc.), dog walkers tend to keep their pets on leash, although off-leash dogs have been observed by park staff as well. During the *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a), when dog walkers were asked which GGNRA sites they visited most often, 0.7 percent indicated Lands End, which tied with another site as the 13th most frequently visited site by dog walkers (NPS 2012a, Appendix A: 6). When non dog walkers were asked the same question, 3 percent indicated Lands End, making it the ninth most frequently visited site by non-dog walkers responding to the survey (NPS 2012a, 29).

From 2008 through 2011, a total of 10 dog-related incidents were recorded at Lands End (table 23a). Incidents included five hazardous conditions which were dog rescues on the Lands End cliffs (table 23a).

From 2012 through 2016, 17 dog-related incidents were recorded, the majority of which (6 incidents) were animal complaints (table 23b).

TABLE 23A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT LANDS END, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Hazardous Condition	2	0	3	0	**5**
Off-leash Violation	0	0	1	0	**1**
Other	3	0	1	0	**4**
Total	**5**	**0**	**5**	**0**	**10**

TABLE 23B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT LANDS END, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	0	1	2	2	1	**6**
Dog Bite	0	0	0	0	2	**2**
Dog Walker in Closed Area	0	0	2	2	0	**4**
Violation of Leash Law	0	0	3	1	1	**5**
Dog/Wildlife Interaction	0	0	0	0	0	**0**
Resource Violation	0	0	0	0	0	**0**
Total	**0**	**1**	**7**	**5**	**4**	**17**

Sutro Heights Park

On-leash dog walking is required throughout Sutro Heights Park. Sutro Heights Park has moderate visitor use, mainly by visitors walking through the garden and attending special events such as weddings.

From 2008 through 2011, a total of 71 dog-related incidents were recorded. The majority of incidents were for having dogs off leash, which suggests that compliance with the dog walking regulations was low (table 24a). Dog-related incidents from 2012 through 2016 was 33 (table 24b).

TABLE 24A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT SUTRO HEIGHTS PARK, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Off-leash Violation	10	11	3	22	**46**
Possessing Pet in Closed Area*	2	0	0	0	**2**
Vegetation Damage	0	1	0	1	**2**
Other	5	4	4	8	**21**
Total	**17**	**16**	**7**	**31**	**71**

* The closed area resulting in violations at this site includes Sutro Park, where pets must be leashed.

TABLE 24B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT SUTRO HEIGHTS PARK, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	2	3	2	1	1	**9**
Dog Bite	0	1	0	0	1	**2**
Dog Walker in Closed Area	0	2	0	0	0	**2**
Violation of Leash Law	13	1	4	0	2	**20**
Dog/Wildlife Interaction	0	0	0	0	0	**0**
Resource Violation	0	0	0	0	0	**0**
Total	**15**	**7**	**6**	**1**	**4**	**33**

Ocean Beach

Currently, on-leash dog walking is allowed year-round between Stairwell 21 and Sloat Boulevard; dog walking under voice control is permitted year-round north of Stairwell 21 and south of Sloat Boulevard. In the Ocean Beach SPPA, from Stairwell 21 south to Sloat Boulevard, dog walking under voice control is allowed from May 15 to July 1; the rest of the year, on-leash dog walking is required for the seasonal protection of western snowy plovers.

Ocean Beach is a moderate to high use area for beachgoers, walkers, runners, birdwatchers, picnickers, equestrians, and surfers. Ocean Beach is a low to moderate use area for dog walking (table 10). For birdwatchers, Ocean Beach also offers areas for recreational birdwatching, particularly the Ocean Beach Trail at the seawall that follows the Great Highway along the ocean (Murphy 1996, 4).The SPPA is a moderately used area for dog walkers, beachgoers, and runners.

A visitor survey documenting visitor experience for Crissy Field, Ocean Beach, and the Presidio (including some sites in Area B, which are outside of the analysis of this final plan/EIS) was conducted in 2008 in two phases. The first phase of the survey found that at Ocean Beach, 6.7 percent of respondents noted dog walking as their primary reason for their visit (Tierney et al. 2009, 52). The second phase of the survey (follow-up telephone survey with the same visitors), found that at Ocean Beach, 22 percent of respondents mentioned off-leash dogs as a moderate or serious problem associated with their park experience (Nakagawa, Rogers, and Adcock et al. 2010, 48).

During the November 2008 visitor surveys, 46 percent of visitors were placed in the catch-all “Other” category, representing general beach recreation. Additional activities observed at Ocean Beach included running/walking (25 percent), surfing (11 percent), dog walking (9 percent), picnicking (6 percent), and biking (3 percent) (table 11) (IEC 2011, 11). The proportion of dog walkers at Ocean Beach on the weekend (11 percent) is slightly higher than the weekdays (9 percent) (IEC 2011, 13). The Ocean Beach visitation estimates only include visitors who spent time on the beach. They do not include visitors who remained on the boardwalk/promenade, visitors who remained in the parking lot, or visitors who remained on the bluff at Sloat Boulevard and Second Overlook (IEC 2011, 23). During the *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a), when dog walkers were asked which site at GGNRA they visit most, 5.7 percent indicated Ocean Beach, making it the fourth most frequently visited GGNRA site by dog walkers (NPS 2012a, Appendix A: 6). Ocean Beach was also indicated as the second most frequently visited GGNRA site by non dog walkers during the survey (18 percent) (NPS 2012a, Appendix A: 69).

Compliance with the dog walking regulation at Ocean Beach was low from 2008 through 2011, a total of 969 dog-related incidents were reported. The majority of the incidents reported were for having an off-leash dog within the SPPA (729 incidents) during the period (July 1 through May 15) when dogs must be leashed (table 25a). Other common incidents were for having a dog in a closed area (as described in table 25a) and for walking dogs off leash. A total of 22 incidents were for hazardous conditions, which included 21 dog bites/attacks and 1 animal cruelty (table 25a). Incidents at Ocean Beach also included dogs disturbing wildlife, including special-status species.

From 2012 to 2016 a total of 156 dog related incidents were recorded (table 25b). These included 73 leash law violations, 33 resource violations and 29 animal complaints (table 25b).

TABLE 25A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT OCEAN BEACH, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Violation of Leash Restriction in SPPA*	141	345	112	131	**729**
Off-leash Violation	62	11	11	5	**89**
Hazardous Condition	4	5	7	6	**22**
Wildlife Disturbance	2	1	1	1	**5**
Disturbance of Threatened and Endangered Species	3	0	0	1	**4**
Pet Excrement	0	2	1	2	**5**
Violation of Closed Area**	75	0	0	0	**75**
General Pet Violations	0	1	0	0	**1**
Possessing Pet in Closed Area**	2	0	0	0	**2**
Other	5	12	11	9	**37**
Total	**294**	**377**	**143**	**155**	**969**

* This violation is for disobeying the seasonal leash restriction (July 1 through May 15).

** The closed areas resulting in violations at this site include Ocean Beach dunes (closed to humans and pets) and the Ocean Beach SPPA (seasonally closed to off-leash dog walking). U.S. Park Police and NPS rangers appear to cite these regulations interchangeably on incident reports, and therefore, these incidents were kept separate and not compiled in this table.

TABLE 25B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT OCEAN BEACH, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	4	2	12	8	3	**29**
Dog Bite	3	2	2	0	2	**9**
Dog Walker in Closed Area	0	4	4	0	2	**10**
Violation of Leash Law	22	7	20	11	13	**73**
Dog/Wildlife Interaction	0	0	0	2	0	**2**
Resource Violation	32	1	0	0	0	**33**
Total	**61**	**16**	**38**	**21**	**20**	**156**

Lifeguard statistics, including warnings to visitors, are typically reported annually into a national database of the United States Lifesaving Association (USLA 2016). GGNRA lifeguards are deployed at Stinson Beach, and usually complete daily logs that are rolled up into these reports annually after the end of the calendar year. As part of those statistics, one item in their annual report identifies the approximate number of warnings issued to visitors due to rule violations (fire, dog, etc.) surf cautions, etc. Lifeguard warnings at Ocean Beach related to dog management issues are reported as typically 10 percent of total warnings for any given year. Most of the dog related warnings are typically for off-leash dogs in the Snowy Plover Protection Area during the leash season. In 2013, a total of 2,500 warnings were given by lifeguards, with approximately 250 being dog related. In 2014, a total of 6,000 warnings were issued, with 600 being dog related. In 2015, a total of 5,000 warnings were issued with 500 being dog related. Warnings were not reported in 2012 and 2016 data is not yet available. NPS realizes that these percentages are estimations; however, it supports the need for dog management at GGNRA, and demonstrates that law enforcement reporting is not representative of overall totals of violations, which can be much higher depending on the site.

Fort Funston

On-leash dog walking or dog walking under voice control is allowed throughout Fort Funston and on the Fort Funston beach, except for two areas: the 12-acre habitat protection area to protect native plant communities and the north end of the Sunset Trail due to erosion.

Fort Funston is heavily used by a variety of user groups including walkers, hang gliders, fishermen, equestrians, birdwatchers, environmental center participants, as well as dog walkers, including commercial dog walkers (table 10). For birdwatchers, Fort Funston offers recreation in the form of birdwatching at both the beach areas along the ocean as well as the dune areas (Murphy 1996, 1). The hang glider platform at Fort Funston provides an excellent view of the ocean, where flocks of feeding birds may be viewed from above (Murphy 1996, 1). Viewing the bank swallows along the cliffs and bird-watching along the Sunset Trail are also favorite areas for bird enthusiasts, including views at both Battery Davis and Skyline Grove (Murphy 1996, 3-4). During the August 2011 visitor surveys, the majority (62 percent) of visitors were dog walkers. Other popular activities included running/walking (25 percent), and hang gliding (1 percent) (table 11) (IEC 2011, 10). The 11 percent of visitors classified as "Other" at Fort Funston were primarily sight-seers who visited the overlook area. Dog walking at Fort Funston was more popular on weekdays (66 percent of visitors) than on weekends (57 percent of visitors) (IEC 2011, 13). During the visitor survey, hangliders may have been undercounted because many hang gliders gathered at the site past dark to socialize, and therefore were not accounted for because the survey ended prior to these visitors leaving the site. Visitation estimates also excluded visitors entering the site at the John Muir Drive entrance, since this park entrance was not surveyed, except when visitors and dogs were counted at this entrance for 2 hours on Sunday, August 21, 2011 (IEC 2011, 23).

During the *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a), when dog walkers were asked which site at GGNRA they visit the most, 40 percent indicated Fort Funston, making it the most frequenly visited GGNRA site at the park by dog walkers (NPS 2012a, Appendix A: 6). Fort Funston was also indicated as the fourth most frequently visited GGNRA site by non-dog walkers during the survey (6 percent) (NPS 2012a, Appendix A: 69).

Park staff has observed commercial dog walkers regularly walking 10 to 12 dogs per visit and generally allowing them to be off leash; park staff has also observed private dog walkers allowing their dogs off leash. During the August 2011 visitor survey, many visitors were observed with large groups of dogs. While some of the visitors may be individuals who own multiple dogs, most were likely professional dog walkers. On weekdays, 50 percent of the dogs observed at Fort Funston were in groups of five or more dogs, with approximately 15 percent in groups of ten or more dogs. In contrast, on the weekends, only 7

percent of the dogs observed were in groups of five or more dogs, and fewer than 2 percent were in groups of ten or more dogs (IEC 2011, 14). These results suggest that many dog owners hire professional dog walkers during the work week when there is a high presence of professional dog walkers at Fort Funston. The high concentration of dog walkers may discourage other users, although some users state that they come to Fort Funston to interact with dogs. Due to the high volume of dogs that visit this site, urination and the associated smell is obvious in areas adjacent to the parking lots.

A total of 172 dog-related incidents were recorded from 2008 through 2011. The majority of incidents recorded were for having a dog off leash and for hazardous conditions. Of the 72 hazardous conditions reported, 41 were for dog bites/attacks, 2 were for verbal assaults, and 29 were for pet rescues at the cliffs of Fort Funston (table 26a). From 2012 through 2016, 157 dog-related incidents were recorded. Of the 157 incidents, 77 were animal complaints, 33 were dog walkers in closed areas, 25 were dog bites, and 20 were violations of the leash law (table 26b).

TABLE 26A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT FORT FUNSTON, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Hazardous Condition	18	20	16	18	**72**
Off-leash Violation	6	4	54	5	**69**
General Pet Violations	1	0	1	0	**2**
Vegetation Damage	1	0	0	0	**1**
Possessing Pet in Closed Area*	0	1	0	0	**1**
Other	2	12	2	11	**27**
Total	**28**	**37**	**73**	**34**	**172**

* The closed area includes Fort Funston cliffs, which had a voluntary seasonal closure between April 1 and August 15. This is no longer a closure but is now an advisory.

TABLE 26B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT FORT FUNSTON, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	2	12	31	20	12	**77**
Dog Bite	7	13	1	2	2	**25**
Dog Walker in Closed Area	1	5	12	2	13	**33**
Violation of Leash Law	4	1	5	3	7	**20**
Dog/Wildlife Interaction	0	0	0	0	0	**0**
Resource Violation	0	0	0	0	0	**0**
Total	**14**	**33**	**49**	**27**	**34**	**157**

Mori Point

On-leash dog walking is permitted in designated areas as indicated by signage. The site has moderate to high use by visitors and is used primarily by locals for walking, running, and biking. A total of 4,909

bicycles were recorded along the Old Mori Trail between April 1, 2016, and June 30, 2016, with an average of 65 bikes per day (GGNRA 2016, 11). The site is also a moderate use area for dog walking (table 10). During the *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a), when dog walkers were asked which site at GGNRA they visit the most, 4.2 percent indicated Mori Point, making it the fifth most frequently visited GGNRA site by dog walkers at the park (NPS 2012a, Appendix A: 6). GGNRA has conducted or sponsored several visitor surveys to determine what activities people participate in on park lands and how satisfied they are with their experience. A small survey (31 respondents) was conducted in 1980 at Mori Point and Sweeney Ridge, which determined that dog walking was the second most popular reason for visiting the area; 21 percent of respondents walk their dogs in the area. Additionally, 35 percent of respondents ranked dog walking as a "very important" or "extremely important" activity at the site (NPS 1980).

Compliance with the dog walking regulation at Mori Point was low from 2008 through 2011, a total of 153 dog-related incidents were reported. Of these incidents, 146 were for having a dog off leash (table 27a). From 2012 through 2016, a total r of 13 dog-related incidents were recorded (table 27b).

TABLE 27A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT MORI POINT, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Off-leash Violation	23	52	41	30	**146**
Hazardous Condition	0	1	1	1	**3**
Pet Excrement	0	1	0	0	**1**
Violation of Closed Area*	1	0	0	0	**1**
Other	0	0	0	2	**2**
Total	**24**	**54**	**42**	**33**	**153**

* The closed area resulting in violations at this site includes Mori Point Road, which requires dogs to be leashed.

TABLE 27B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT MORI POINT, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	0	0	1	0	0	**1**
Dog Bite	0	0	0	0	0	**0**
Dog Walker in Closed Area	0	0	3	0	0	**3**
Violation of Leash Law	4	0	0	2	2	**8**
Dog/Wildlife Interaction	0	0	1	0	0	**1**
Resource Violation	0	0	0	0	0	**0**
Total	**4**	**0**	**5**	**2**	**2**	**13**

Milagra Ridge

On-leash dog walking is currently allowed along the trails at Milagra Ridge. The site has moderate visitor use, with mostly local visitation by walkers and hikers and low to moderate use by dog walkers (table 10).

From 2008 through 2011, 39 dog-related incidents were reported. A total of 35 incidents were for having a dog off leash (table 28a). From 2012 through 2016, a total of 15 dog related incidents were recorded with the majority (10 violations) being for leash violations (table 28b).

TABLE 28A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT MILAGRA RIDGE, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Off-leash Violation	5	14	8	8	**35**
Pet Excrement	0	0	1	0	**1**
Other	1	0	0	2	**3**
Total	**6**	**14**	**9**	**10**	**39**

TABLE 28B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT MILAGRA RIDGE, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	0	0	1	0	0	**1**
Dog Bite	0	1	0	0	0	**1**
Dog Walker in Closed Area	0	1	1	1	0	**3**
Violation of Leash Law	4	2	0	2	2	**10**
Dog/Wildlife Interaction	0	0	0	0	0	**0**
Resource Violation	0	0	0	0	0	**0**
Total	**4**	**4**	**2**	**3**	**2**	**15**

Sweeney Ridge/Cattle Hill

On-leash dog walking is allowed on all trails at Sweeney Ridge except the Notch Trail, which is closed to dog walking to protect mission blue butterfly habitat. Sweeney Ridge has low visitor use, consisting mostly of bikers and hikers, and low to moderate use by dog walkers (table 10). Cattle Hill is not currently part of GGNRA. However, Cattle Hill is within the boundary and it is anticipated that the land will transfer to NPS management in the near future. Unrestricted dog walking currently occurs at Cattle Hill, although GGNRA does not have numerical information for this site. GGNRA has conducted or sponsored several visitor surveys to determine what activities people participate in on park lands and how satisfied they are with their experience. A small survey (31 respondents) was conducted in 1980 at Mori Point and Sweeney Ridge, which determined that dog walking was the second most popular reason for visiting the area; 21 percent of respondents walk their dogs in the area. Additionally, 35 percent of respondents ranked dog walking as a “very important” or “extremely important” activity at the site (NPS 1980).

Currently, compliance with the dog regulations at Sweeney Ridge is low. From 2008 through 2011, a total of 115 dog-related incidents were reported, with 113 of the incidents for having an off-leash dog (table 29a). From 2012 through 2016, a total of 18 dog-related incidents were recorded (table 29b).

TABLE 29A. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT SWEENEY RIDGE/CATTLE HILL, 2008–2011

Incident Type	Year				Total
	2008	2009	2010	2011	
Off-leash Violation	18	27	32	36	**113**
Hazardous Condition	0	0	0	1	**1**
Possessing Pet in Closed Area	0	0	0	1	**1**
Total	**18**	**27**	**32**	**38**	**115**

TABLE 29B. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT SWEENEY RIDGE/CATTLE HILL, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	1	0	2	0	0	**3**
Dog Bite	0	0	0	0	0	**0**
Dog Walker in Closed Area	0	2	1	0	0	**3**
Violation of Leash Law	5	0	4	2	0	**11**
Dog/Wildlife Interaction	0	0	0	0	0	**0**
Resource Violation	1	0	0	0	0	**1**
Total	**7**	**2**	**7**	**2**	**0**	**18**

Rancho Corral de Tierra

Land within Rancho Corral de Tierra was transferred to the NPS in December of 2011, and has been under the NPS servicewide regulation for dog walking (36 CFR 2.15) since that time. Prior to the transfer, the site was owned by the Peninsula Open Space Trust, and was not formally open to the public. However, to the degree public use occurred under Peninsula Open Space Trust ownership, the San Mateo County general leash requirement applied to the site (see http://www.animallaw.info/local/louscasanmateo.htm#s6.04.070).

An informal trail use study was conducted in 2010 at Rancho Corral de Tierra in the Montara area, an approximately 127 acre area that is a primary area for visitors (particularly off-leash dog walkers according to information from the Montara Dog Group), to identify current trail users and determine activity on specific trail segments (Bennett 2011). This survey was not peer reviewed, and is not relied upon by NPS for impacts analysis or decision-making, however, this survey is the best available information NPS has showing conditions at Rancho Corral de Tierra before NPS acquired the site. The survey monitored multiple trails from one vantage point over the course of 10 visits during four months. A total of 418 park visitors were observed, 250 of which were characterized as dog walkers (331 dogs were observed), which accounts for 58 percent of total visitor use at that portion of the Rancho site. This is not an unexpected percentage given this area's identification by the Montara Dog Group as one of two primary areas at Rancho Corral de Tierra used for off-leash dog walking. During this survey, visitors that were observed walking dogs as well as performing other activities were recorded only as walking dogs; all individuals within a group where a dog was present were recorded only as dog walkers. In the overall user categories, dog walking accounted for 58 percent of the total visitor use at the site, with 86 percent of dog walkers observed walking their dog(s) off leash and 14 percent walking their dogs on leash (Bennett 2011). Casual use of the site accounted for 26 percent. Exercising and biking accounted for 6 and 7

percent of the observed uses of the site, respectively. The 86 percent off-leash dog walking figure is consistent with information shown on maps provided to GGNRA by the Montara Dog Group, which identified the area in which the study took place as one of two primary areas for off-leash dog walking at Rancho Corral de Tierra, as noted above.

No official data have been gathered on visitor use or law enforcement statistics for Rancho Corral de Tierra since NPS acquired the land, although NPS rangers are contacting visitors at the site regarding dog-walking regulations. The information described in this section is based upon observations from staff in the field and anecdotal information provided by adjacent neighbors of the lands and park visitors. The number of visitors to Rancho Corral de Tierra has not increased substantially since the property transferred to the NPS; however, some residents and park staff have noticed that commercial dog walkers have begun to use the site. Visitor use is considered low to moderate with use primarily by local residents. Moderate use is more likely in the Montara and El Granada sections, which are in lower elevations closer to neighborhoods, with lower use in the higher elevations. A total of 2,340 bicycles were recorded along the Old San Pedro Mountain Road Trail between April 1, 2016 and June 30, 2016 with an average of 26 bikes per day (GGNRA 2016, 12). Dog walking is considered a primary use at this site based on staff experience and public comment Ranger-led hikes have been low on attendance but increase visibility of the property and have generated some additional visitor use. Compliance with the NPS on-leash dog walking regulation (36 CFR 2.15) is low, with park staff reporting that some visitors refuse to leash their dogs when informed of the leash requirement by non-law enforcement staff.

During the *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a), when dog walkers were asked which site at GGNRA they visit the most, 7 percent indicated Rancho Corral de Tierra, making it the third most visited park site by dog walkers responding to the survey (NPS 2012a, Appendix A: 6). Rancho Corral de Tierra was also indicated as the fifth most frequently visited GGNRA site by non dog walkers during the survey (5 percent) (NPS 2012a, Appendix A: 69). Note, however, that the response rate to this study was extremely low, approximately 13 percent, despite being sent to every person and organization on the dog management plan/EIS mailing list (approximately 7,000), although the highest percentage of respondents from one zip code (6.25 percent) were from San Mateo County, specifically Pacifica, the city just north of RanchoCorral de Tierra.

Currently, dog walking on leash is allowed at the site; voice control dog walking is not currently allowed. According to information from the Montara Dog Group and subsequent staff observations, dog walkers, particularly off leash dog walkers, primarily use the lower elevations of the site at both the Montara and El Granada areas. The terrain at El Granada is particularly steep and challenging, thus dog walking use in that area appears to be concentrated mostly in the lower elevations. Although the Montara area is less steep, visitor use there is similarly concentrated in the lower elevations, but some dog walkers in the Montara area do use trails that connect to the top of the Rancho site. Commercial dog walkers have also recently started to use the El Granada area off Coral Reef Avenue; however, commercial dog walking is considered a low use at the site overall.

Dog-related incidents recorded from 2012 through 2016 at Ranchero Corral de Tierra are listed in table 30 below. A total of 12 incidents occurred, 10 of which were violations of the leash law. Data prior to 2012 was not recorded.

TABLE 30. NUMBER AND TYPE OF DOG-RELATED INCIDENTS AT RANCHO CORRAL DE TIERRA, 2012–2016

Incident Type	Year					Total
	2012	2013	2014	2015	2016	
Animal Complaint	1	0	0	0	0	**1**
Dog Bite	0	0	0	0	0	**0**
Dog Walker in Closed Area	0	0	0	0	0	**0**
Violation of Leash Law	1	0	6	1	2	**10**
Dog/Wildlife Interaction	0	0	0	0	0	**0**
Resource Violation	0	1	0	0	0	**1**
Total	**2**	**1**	**6**	**1**	**2**	**12**

AESTHETICS

Dogs can also indirectly affect visitors because of dog waste, plastic bags containing waste, or large amounts of dog hair from grooming left on beaches, on trails, or near the park's aquatic resources. Although posted signs indicate that owners are responsible for removing pet waste, this rule is not always followed. Two percent of the ANPR comments noted that off-leash dogs spoil park sites by defecating and urinating and that dog owners sometimes fail to clean up after their dogs (NAU 2002a, 12). Park sites, such as the head of the Alta Trail, Fort Funston, and the areas around the trash receptacles at Crissy Field, that have a high concentration of dog use are prone to a distinct smell of dog urine and solid waste.

SOUNDSCAPES

The natural sounds heard in GGNRA are a positive and valued park resource, as well as an important component of the visitor experience, which dog presence or barking may interrupt. Natural soundscapes are protected under Director's Order #47 (NPS 2000a) because they are vital to the natural function of ecosystems, cultural/historic values, and visitor experience. Soundscapes in the park provide a variety of seasonally changing visitor experiences that are important to some park users as a refuge from the noise of the urban environment. An example is the spring birdsong, which is most prevalent in more remote areas and along riparian and forested habitats. Subtler experiences—lapping waves and frog choruses—may also enrich the visitor experience. Potential disturbances from barking dogs may change the natural character of the area and the overall visitor experience. The raucous sounds of a disturbed wildlife community—birds and small mammals giving alarm calls—also add to the disruption of the visitor's experience of the soundscape. The natural soundscape is also important aside from visitor experience, as wildlife may depend on it for successful communication with others of its species, escape from predators or other dangers, protection of young, or other functions.

ENVIRONMENTAL JUSTICE

Some ethnic or low-income populations may be more negatively affected by off-leash dog walking. The phone survey conducted in 2002 by Northern Arizona University (NAU 2002b, 26) separated data by race and income, as well as other variables, and found slightly lower support from low-income families for allowing off-leash dog walking in GGNRA. The survey indicated that 13.3 percent of respondents with annual incomes lower than $50,000 strongly supported off-leash dog walking, whereas 21.7 percent of those with incomes from $50,000 to $100,000 and 20.4 percent of those with incomes over $100,000 strongly supported it. Regarding park use by minorities, the elderly, children, and people with special

needs, 11 percent of ANPR respondents noted that off-leash dogs discourage park use by these groups. As one respondent said, “They [off-leash dogs] take over the beach from people by intimidating small children” (NAU 2002b, 11). In contrast, 3 percent believed that the presence of off-leash dogs enhanced the experience of these populations. For example, one respondent said, “I have seen many people in wheelchairs walking their dogs. All kinds of people have dogs—with this common bond—we all come together” (NAU 2002a, 20). During the public comment period for the draft plan/EIS, some commenters noted the importance of off-leash dog walking by minority populations at the park. One commenter stated, “It is important to weigh the opinions of the ethnic "minorities" who actually go to the park to enjoy off-leash. The National Parks have a reputation of being unwelcoming to non-white ethnic groups. It would be a challenge to find a recreation that is more diverse than off-leash dog walking. Fort Funston has a better mix of Asians, Black Americans, Pacific Islanders, East Indian, etc. than you are likely to find elsewhere in the parks. Off- leash recreation is a success story in term of the National Parks being welcoming to ethnic minorities.” (NPS 2011a, Correspondence 4592).

San Francisco County is a racially diverse area, with minority populations accounting for approximately 51 percent of the population. The largest minority group in the San Francisco area is people of Asian descent (33.3 percent), followed by Hispanic/Latino people (15 percent) (U.S. Census Bureau 2012, 1). San Francisco State University conducted a study of ethnic minority groups (Hispanic/Latino, African American/Black, and Asian/Pacific Islander), using focus group interviews to determine ways to better connect these groups to the park (Roberts 2007, i). While not all participants were familiar with GGNRA, a common theme was identified, as related to dog management in the park: dogs were a problem mentioned by Hispanic/Latino and Asian/Pacific Islander groups (Roberts 2007, iii). Hispanic/Latino people expressed the most concern with dog owners’ lack of concern or control over their dogs. For example, participants in the survey noted that dog owners assume that other people will like the owners’ dogs as much as they do; dog owners let their dogs approach other people without first asking their permission; and owners do not react to their dogs begging for other people’s food. One participant stated, “Every time we go to picnic the dogs come and eat our food, they wander around, and the owners don’t do anything. The same with their bowel movements! The owners don’t clean after them” (Roberts 2007, 34). Research found that Hispanic/Latino people and Asian/Pacific Islanders mentioned dogs, especially dog waste, as a barrier to park visitation and a constraint to enjoyment of the park (Roberts 2007, 28).

A visitor survey documenting visitor experience for Crissy Field, Ocean Beach, and the Presidio (including some sites in Area B, which are outside of the analysis of this final plan/EIS) was conducted in two phases in the summer and fall of 2008. The first phase of the survey involved an intercept survey (personal contact with visitor) to provide a visitor population profile, including a more thorough understanding of who visits the parks, use patterns, their likes and dislikes, and also a preliminary understanding of their visitor experience (Tierney et al. 2009, 1). The second phase of the survey included a follow-up telephone survey with the same visitors interviewed in the first phase to gather more detailed information on visitor experiences, satisfaction, and opinions about park management (Nakagawa, Rodgers, and Adock et al. 2010, 8). In the first phase, questions directed to respondents regarded their background (ethnicity, language spoken at home, state of residence, income), as well as questions on their ease of access to the sites, quality rating of the sites, reasons for visiting the park, what they liked or disliked about the sites, and their suggestions for improving the visitor experience. Both phases of the 2008 study found that frequency of suggestions about keeping dogs on leash and citing off-leash dogs was fairly consistent among Asian and White respondents. Visitors were asked during the survey if they had any suggestions on how their experience at the park site could be improved, allowing for open-ended answers. Of the respondents, 3.3 percent noted that dogs should be kept on leash, visitors should be cited for off-leash dogs, or that there should be no dogs (Tierney et al. 2009, 69). White respondents suggested that dogs be kept on leash 3.4 percent of the time, and Asian respondents suggested this 3.2 percent of the time (Tierney et al. 2009, 75). This concern was not cited by Black/African American, Native Hawaiian, or American Indian respondents who were asked for suggestions on how to improve the park experience

(Tierney et al. 2009, 75). In the second phase of the survey (telephone survey), 16 percent of all respondents noted dogs off leash as a "moderate" or "serious" problem associated with the park experience. It was found that 20 percent of Hispanic respondents and 19 percent of Asian respondents cited dogs off leash as a moderate or serious problem at these sites (Crissy Field, Ocean Beach, and the Presidio Area B), while 14 percent of White respondents noted off-leash dog walking as a serious issue (Nakagawa, Rodgers, and Adock et al. 2010, 51). The percentage of respondents who cited dogs as a reason for returning to the park sites (Crissy Field, Ocean Beach, and the Presidio Areas A and B) were similar among different racial and ethnic groups, with White respondents citing dogs 11 percent of the time, and Asian and Hispanic respondents 9 percent of the time (Nakagawa, Rodgers, Adock et al. 2010, 62). Similarly, 7 percent of all respondents mentioned dogs when they were asked to describe special park qualities. The percentage of respondents who mentioned dogs in response to this prompt varied slightly across racial and ethnic groups, with 8 percent of Whites, 9 percent of Hispanics, and 11 percent of Asians noting dogs (Nakagawa, Rodgers, Adock et al. 2010, 67).

In addition to the responses discussed above, household income levels were also included in results of the survey described above. Dog walking at the park sites discussed in the Tierney et al. study does not appear to be a primary activity for those making less than $25,000 in household income, with only 2.2 percent of these respondents citing dog walking as the primary reason for visiting the sites (Crissy Field, Ocean Beach, and the Presidio Areas A and B). This contrasts with those who had a household income greater than $150,000, 16.9 percent of whom cited dog walking as their primary reason to visit the park sites (Tierney et al. 2009, 54).

PARK OPERATIONS

Park operations include the time and money resources that the GGNRA staff uses in managing dog walking activities in the park. It includes law enforcement, administration and planning, natural resource management, and maintenance. In addition, community relations and public education are integral components of dog management at GGNRA.

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BUDGET AND EMPLOYEES

In fiscal year 2015, the park had an operating budget of approximately $26.5 million in base operation of national park system funding. In that same year, the park also received approximately $18 million in other funding from a variety of sources, including concession fees, recreational fees, leasing income, permit fees, and NPS servicewide special project funding from sources including line item construction, cyclic maintenance, equipment replacement, and repair/rehabilitation. Most of this funding must be used for specific purposes, such as fund-source-specific projects or cost recovery. In fiscal year 2015, GGNRA staffing consisted of 263 employees (215 permanent, 32 term, and 16 temporary employees), excluding the U.S. Park Police.

COMMUNITY RELATIONS AND PUBLIC EDUCATION

GGNRA is an acknowledged leader in enlisting organizations for partnerships that leverage the park's ability to preserve resources, educate the public, and provide recreational opportunities for visitors. Many of these partners occupy and maintain park buildings through leases, cooperative agreements, and other legal authorities. Over recent years, the park has worked to improve community relations with regard to dog walking through response to public calls and inquiries, updates of dog walking information on the park web site and information line, outreach efforts by volunteer groups and park stewardship programs, and meetings with dog walking and other user groups. Representatives of dog walking groups were also

members of the Negotiated Rulemaking Advisory Committee. The majority of funding for visitor education about dog regulations in recent years has come from the Management Assistant's budget, with assistance from the Public Affairs budget (which had a total budget of $362,197 in fiscal year 2015).

LAW ENFORCEMENT

The mission of GGNRA law enforcement personnel is to protect people, property, and park resources and to ensure that park visitors can enjoy the park without unlawful interference. This mission is achieved through interpretative and educational efforts, community outreach, and enforcement actions appropriate to establishing an effective level of compliance with applicable laws and regulations.

Law enforcement and search and rescue requirements are extensive due to the park's proximity to a large urban area, high visitation, essentially open access, wide range of resources, and wide variety of recreational opportunities. Law enforcement programs at GGNRA operate from three primary locations: Ranger Stations at Building 223 in the Presidio and Building 507 at Fort Baker, and U.S. Park Police San Francisco Field Office Headquarters at Building 1217 at the Presidio. Patrol operations cover all GGNRA lands, with U.S. Park Police operations including San Francisco, southern Marin, and San Mateo counties.

Law enforcement activities pertaining to dog management include resolving conflicts between dog walkers and other user groups, giving written or verbal warnings or issuing citations to dog walkers not complying with the current regulations, educating the public on dog management regulations, preparing and filing reports related to dog and visitor incidents, performing supervisory review of reports, and appearing in court on dog management–related cases. During the start of seasonal leash regulations in Ocean Beach SPPA and Crissy Field WPA, park law enforcement is present at these sites to educate dog walkers on current leash policies.

Violations are handled using a reasonable enforcement response. Responses can range from a verbal or written warning, relying on education and deterrence to gain compliance, to written citations, up to custodial arrests, as appropriate. Visitor incidents involving dogs and dog walkers are handled by park law enforcement in the same manner as all other violation contacts. Due to the extensive history and changing pet enforcement strategies at GGNRA, law enforcement officers are sensitive to the potential for confusion on the part of the general public and therefore make an effort to achieve compliance through educational contacts. Where conflicts are more pronounced, officers have the discretion to use the range of enforcement actions necessary to achieve visitor safety and compliance.

Rangers and U.S. Park Police will contact dog walkers for the following violations: violations of pet regulations, including the NPS leash law where currently applicable; habitat protection closure violations; harassment of wildlife; and incidents involving visitors and dogs or dog owners. Leash violation citations are assigned a collateral fine of $50 plus a $25 processing fee in accordance with the U.S. Magistrate's uniform bail schedule. Other violations range up to $500 or mandatory court appearances. Search and rescue teams also perform technical cliff rescues for visitors and dogs when needed; almost all these rescues have been conducted at Fort Funston. Park staff members routinely observe dog owners leashing their pets when law enforcement personnel are noticed in areas of the park where the NPS leash regulation is applicable, which could imply the public has been educated regarding the regulations, but some choose to disregard it unless law enforcement is present.

During the public comment period for the draft plan/EIS, commenters expressed a lack of enforcement under current conditions, and noted unsuccessful attempts to contact park enforcement personnel, resulting in hostility for visitors who tried to address non-compliance on their own. These visitors expressed that presence of rangers in the park was sparse and ticketing and education was uncommon,

resulting in more non-compliance. One commenter stated, "I visit the GGNRA parks nearly 3-4 times a week and never see rangers providing education to the public about current park rules and … enforcing dangerous dog laws, voice control or poop pickup" (NPS 2011a, Correspondence 4181). Law enforcement is responsible for covering approximately 80 miles of separate, non-contiguous park sites. There are approximately nine law enforcement staff members and U.S. Park Police patrolling park sites per shift; therefore, law enforcement must strategize which sites to assign staff to each shift. In addition many law enforcement staff patrol in pairs when monitoring for pet related compliance. Low use sites and small sites are not as regularly patrolled due to staffing limitations. Approximately 1 percent of law enforcement time is devoted to dog management–related issues. Crissy Field and Ocean Beach have historically required the most attention from law enforcement staff. Dog management activities for law enforcement staff include court time for the approximately 10 percent of violators who challenge their tickets. Law enforcement staff spend approximately 5 minutes for each verbal warning and 10 minutes for each written warning given to visitors. Table 5 displays the type of incident and number of incidents documented from 2001 through 2011. As previously noted, a total of 4,932 dog-related incidents were recorded at the park from 2001 through 2011, which represents 11 percent of all violations at GGNRA. The types of dog-related incidents (leash law violations, dog bites, etc.) are further broken down by site from 2008 through 2011 in tables 12a through 29a. Although the incident reports include detailed information regarding dogs, they do not include visitor complaints or visitor contacts with dogs that did not result in a written incident report. Pet citations related to wildlife disturbance and citations given in WPAs have also been presented in tables 12a through 29a. As previously described, a total of 1,537 dog-related incident associated with natural resources occurred at GGNRA from 2008 through 2011. NPS changed its reporting software and inputting system in 2012, and data were not collected or categorized in a similar manner as previous years, including dog-related incidents, which were not recorded separately, but captured under "Other Offenses," which also includes non-dog related incidents. The category also includes dog and non-dog related offenses. Tables 12b through 29b and table 30 break down the types of dog-related incidents by site for 2012 to 2016.

ADMINISTRATION AND PLANNING

The administrative staff is responsible for management activities that educate visitors on the current dog walking policies. The park posts or updates signs and maps with current dog walking regulations and maintains a list of all restricted areas (NPS 2008b, 19–20), as well as a complete list of areas available for dog walking both on and off leash and those closed to dogs, on its web site. The park also maintains a Dog Management Information Line with the current status of the dog management process, where the public can leave messages for park staff. The line is monitored and calls are responded to daily. The park produced business-style information cards to educate the public on the ANPR and the negotiated rulemaking processes. These cards are available at park visitor centers and are handed out by park staff; NPS rangers and U.S. Park Police hand them out with each pet violation contact and citation issued.

In the wake of the 2005 court decision that again altered dog management policies at certain park sites, law enforcement staff members are educating and warning dog walkers who are in violation of regulations, rather than ticketing them, if they believe the violation is a result of confusion over current policies. The park has encouraged dog walking groups that participated in the Negotiated Rulemaking Advisory Committee to distribute the most current GGNRA dog walking information and regulations through their web sites and information outlets and reminded them that this would be their responsibility once a new regulation was in place. Also, the Snowy Plover Docent Program was established in 2007/2008 to help educate the public about the western snowy plover and the protection areas for the plover established by the park at Ocean Beach and Crissy Field.

NATURAL RESOURCE MANAGEMENT

GGNRA supports numerous programs that enhance and/or restore natural resources in different areas of the park and under different contexts. These park stewardship programs encompass such park-sponsored and volunteer programs as the Site Stewardship Program, the Presidio Park Stewards, the Habitat Restoration Team, the Invasive Plant Patrol, the Trails Forever Program, Golden Gate National Parks Conservancy, the Headlands Institute, and the Presidio Trust.

Natural resource specialists manage and monitor ecosystems and the physical environment in order to preserve and restore healthy systems and populations. Management includes invasive species control, habitat restoration, and threatened, endangered, and candidate species protection. Planning efforts by natural resource staff related to dog management include protecting habitat from dogs, handling complaints concerning dogs, and assisting in preparation of signage and outreach material related to dog use impacts and restrictions. Hydrologists are involved with review of erosion issues associated with dogs. Ecologists at the park, specifically the Crissy Field ecologists, are responsible for restoration areas and fencing in high dog use areas, water quality monitoring, and tracking complaints about dogs. GIS specialists fulfill mapping needs associated with dog management planning for brochures, the park web site, etc. In fiscal year 2015, the natural resources budget was $1,218,896 and total natural resources volunteer time was 204,724 hours. In fiscal year 2016, the total natural resources volunteer time was 215,278 hours.

CULTURAL RESOURCE MANAGEMENT

Cultural resource specialists monitor projects and perform research to ensure the stabilization, preservation, and restoration of historic structures and landscapes and archeological resources.

MAINTENANCE

Maintenance of the extensive park lands and widespread facilities in Marin, San Francisco, and San Mateo counties is a major, ongoing task and cost for park operations, and is one of the largest budgets in the park. Structures, historic and non-historic, need basic maintenance and repair or rehabilitation; utilities and infrastructure must be maintained; and trails, roadways, and parking lots need rehabilitation and repair. Landscaping and irrigating, pruning trees, repairing and installing fences and gates, cleaning restrooms, and collecting trash are some of the basic activities in the scope of work needed to maintain park facilities and resources at an acceptable level. Maintenance Division facilities are located at Stinson Beach, Fort Cronkhite, and Fort Baker in Marin County, and at Crissy Field, Fort Mason, and Fort Miley in San Francisco County.

Maintenance operations related to dog management include garbage collection, repair of vandalized signs and property, and replacement of garbage receptacles that have been damaged by dog urine. Signs that list dog-related regulations and educational information are frequently vandalized and must be replaced by the maintenance staff. Cleanup of dog waste not properly disposed of is not a regularly scheduled GGNRA maintenance task. Dog walking associations at Fort Funston and Crissy Field hold cleanup days on a regular basis to assist in park cleanup. Maintenance staff is responsible for emptying trash cans throughout the park, which often are filled with dog waste. In areas of heavy dog walking use, trash receptacles are emptied twice as often due to weight of the dog feces, not the volume of the trash cans. Three areas with high maintenance costs due to trash removal include Ocean Beach, Fort Funston, and Lands End/Fort Miley. Maintenance staff is on duty in these areas 7 days per week. Table 31 shows the total number of maintenance hours and labor and costs associated with trash removal in these areas. Total hours for Crissy Field were added for comparison purposes.

TABLE 31. TOTAL MAINTENANCE AND LABOR HOURS AND COSTS ASSOCIATED WITH TRASH REMOVAL FROM OCTOBER 2006 TO APRIL 2008

Site	Maintenance Labor Hours	Total Labor and Materials Cost
Ocean Beach	814	$26,102
Fort Funston	1,665	$44,510
Lands End/Fort Miley	539	$13,592
Crissy Field	226	Not Available

HUMAN HEALTH AND SAFETY

The health and safety of visitors and park staff, volunteers, and partners are of paramount concern to the NPS. NPS *Management Policies 2006* summarize the commitment of the NPS to providing appropriate, high-quality opportunities for visitors while striving to protect human life and providing for injury-free visits (NPS 2006a, 105).

Existing conditions related to dogs and their management in GGNRA can involve inherent risks to the health and safety of both visitors and staff. These risks vary between park staff and visitors and are addressed separately below. In general, risks include injuries related to aggressive dogs, dog bites (to humans, other dogs, and horses), belligerent dog owners, dog and/or owner rescues, and health issues related to dog waste (water and soil contamination, etc.). Ongoing conditions related to dogs in the park continue to pose health and safety risks to both staff and visitors.

EXPOSURE TO PATHOGENS FROM DOGS

Wherever dogs swim and run, their feces introduce pathogens into the water, soils, and sand, and also onto vegetation and paved surfaces, possibly elevating the risk of human disease. Infections with these pathogens can take place through ingestion of or contact with contaminated sand, vegetation, or water. Leaving pet waste on the ground can expose children, adults, or other pets to diseases (CRCCD 2009, 1). Park sites that may pose a higher risk of infection from pathogens found in dog waste include heavily used dog walking areas, beach areas where many visitors are barefoot, and sites where children often play. During the public comment period for the draft plan/EIS, some commenters noted the amount of dog waste at GGNRA sites, especially within the beach areas. One commenter stated, “Just yesterday while coming out of the water from surfing I witnessed a woman watch her dog defecate in the shallow water and then just walk away. It happens all the time, virtually every day. I personally have seen dogs run up and pee on innocent bystanders - children even - who just happen to be sitting on the beach” (NPS 2011a, Correspondence 1169).

VISITORS

Most of the issues related to the health and safety of park visitors are related to the nature of their encounters with unruly/aggressive dogs. The number of visitor incidents related to dog activities is typically low at sites with low visitor use or at sites where dogs are usually walked on leash. Tables 12–30 contain the number of pet-related violations documented at GGNRA sites included in the draft plan/EIS, which is based on the park’s 2008–2011 criminal incident records. Park sites where the number of visitor incidents related to dog activities is highest include the Marin Headlands Trails, Crissy Field, Ocean Beach, and Fort Funston. High numbers of incidents occur at these GGNRA sites because of the large number of people that use the sites at one time and the high number of dogs off leash at the site, the presence of dogs in areas where they are not permitted (such as many of the trails in the park), or the

noncompliance by some members of the public with the NPS leash regulation that is applicable in many GGNRA sites. Noncompliance with the NPS leash regulation still applies in many GGNRA sites that were never opened to off-leash dog walking, were not included in the 1979 Pet Policy or where there is a special regulation to protect the federally threatened western snowy plover.

The criminal incident reports for the years 2008 through 2011 recorded violations of 36 CFR 2.34 (a), "hazardous conditions," related to dog walking in GGNRA. This category includes dog bites and/or dog attacks that have occurred at the park. There were a total of 95 dog bites/attacks at GGNRA sites from 2008 through 2011. Fort Funston had the highest number of reported dog bites/attacks (41), followed by Ocean Beach, which had 21 dog bites/attacks (appendix G). Data collected by the Centers for Disease Control and Prevention show that approximately 4.5 million Americans are bitten by dogs each year, and one in five dog bites results in injuries that require medical attention (Centers for Disease Control and Prevention 2009). Small children are typically the most common victims of dog-related injuries because of their natural behaviors, such as running, yelling, grabbing, or hitting, which may threaten a dog. Children are also more likely than adults to receive medical attention (Centers for Disease Control and Prevention 2009). Elderly people are also considered at a higher risk of complications from dog-related injuries due to their increased susceptibility to bruising, lacerations, or broken/dislocated bones. Additionally, elderly people may have decreased sensory perception, which could result in them not seeing or hearing a dog or could make them unable to escape from an aggressive dog (AVMA Task Force 2001, 1742). Data collected by law enforcement staff as described above indicate that dog bites/attacks have occurred at GGNRA sites, which is a health and safety concern to park visitors.

Dog-related incidents from 2012 through 2016 were categorized differently than those from 2008 through 2011. The 2012 through 2016 data includes violations for an animal complaint, dog bite, non-compliant dog walker, leash violations, and wildlife disturbance. An animal complaint can encompass different situations including complaints about barking dogs, dogs fighting, dogs left unattended, inappropriate contact with dogs, aggressive dogs, and lost dogs. Dog bites include a reported injury from a dog. Non-compliant dog walking violations are similar to violation of a closed area described above. In addition, leash violations and wildlife disturbance violations are the same as described above. The different categorization resulted from a NPS servicewide change in law enforcement reporting and tracking software and its implementation.

From 2012 through 2016, GGNRA NPS rangers and U.S. Park Police (law enforcement staff) recorded a total of 1,066 dog related incidents for animal complaints, dog bites, dog walkers in closed areas, violations of the leash law, dog/wildlife interactions and resource violations. Of these citations, 232 occurred at Marin Headlands, 157 at Fort Funston and 156 at Ocean Beach. A total of 421 reports of leash law violations, 165 dog walkers in closed areas, and 289 animal complaints that are considered in this final plan/EIS were recorded by GGNRA law enforcement staff between 2012 and 2016.

During the public comment period for the draft plan/EIS, some park visitors described incidents where they came into conflict with unruly or aggressive dogs. The following quotes illustrate the public's concern: "I've been attacked by a dog while riding a bike, and another dog charged 2 of us while on horseback-causing the person I was with to fall and be injured (NPS 2011a, Correspondence 959)." "My daughter has been jumped by dogs a number of times, being knocked down as well as receiving large scratches on her legs (NPS 2011a, Correspondence 968)." Many visitors have cited concerns about safety of small children when visiting GGNRA and noted that the current atmosphere with off-leash dogs have made visitors avoid the parks with their children or grandchildren. One commenter stated, "It is too dangerous to allow any dog to roam without a leash. One never knows when a dog may bite, especially a child whose face is close to the level of the dog's mouth."(NPS 2011a, 4278) The potential for visitors to encounter unruly dogs are higher at sites where visitor use is high and dogs are often off leash, including but not limited to Crissy Field, Ocean Beach, and Fort Funston. As previously discussed, table 10

presents a qualitative estimation (low, moderate, or high) of visitor use at each of the park sites. This visitor use data were based on input from the Negotiated Rulemaking Advisory Committee (NPS 2006g, 1–7) the best professional judgment of the park staff, and visitor use surveys conducted in 2008 and 2011 (at six sites).

From the years 2008 through 2011, a total of 2,775 dog-related incidents were recorded in GGNRA for leash-law violations, dog bites or attacks, hazardous conditions or pet rescues, having dogs in closed areas, and failure to pick up pet excrement (tables 12a–29a). The number of dog-related incidents in the 2008 through 2011 analysis does not match the number of incidents in the analysis of the overall law enforcement data (1,930 dog-related incidents) in table 5 (which includes incidents not related to dogs) because incident reports may contain more than one violation. This analysis is based on a review of the incident descriptions in each law enforcement report; there were often multiple incidents violations per incident report. Pet-related incidents may include dogs acting aggressively towards visitors, dog and horseback rider incidents, off-leash dogs disrupting picnicking families, visitors being knocked down by dogs, dogs intimidating small children, dog owners refusing to leash their dogs, etc. Injuries to visitors may occur while fleeing from a threatening dog. It is also assumed that a large percentage of visitors that experience incidents with dogs do not report them to park staff. From 2012 through 2016, a total of 1,066 dog related incidents were documented for animal complaints, dog bites, dog walkers in closed areas, violations of the leash law, dog/wildlife interactions and resource violations within the sites analyzed in this plan (tables 12b–29b and 30).

A study of 17 California dog parks conducted by the University of California, Davis, School of Veterinary Medicine, noted that dog bites go unreported if a person does not want to jeopardize off-leash dog walking areas (Foster 2006).

However, some park visitors feel more secure or safe when walking in GGNRA sites with a dog. This is an especially common response from women and women with children. During the public comment period for the draft plan/EIS, one commenter stated, “I have always felt much better, when my wife and children are out enjoying the beach and trails, that they have our dog with them for safety” (NPS 2011a, Correspondence 649).

A number of recent accessibility improvements have been implemented within dog walking areas in GGNRA. Muir Beach, Rodeo Beach, Marin Headlands (Rodeo Valley), Fort Mason, Crissy Field, Lands End, and Mori Point have all completed accessible on-leash dog walking paths. Beach mats are provided at Muir Beach and Rodeo Beach during the summer months. Muir Beach, Rodeo Beach, and Crissy Field also provide beach wheelchairs.

STAFF

Park staff (particularly law enforcement staff), volunteers, and partners have been targets of physical and verbal abuse by dog owners who have been contacted regarding pet violations in the park. Conflicts typically occur when a dog owner is contacted regarding violation of a pet regulation. Conflicts are more likely in park areas of high use and elevated conflict levels, such as Crissy Field and Ocean Beach. Due to the increase in law enforcement and visitor conflict regarding compliance with pet regulations following the park’s efforts to initiate enforcement of the NPS leash regulation parkwide in 2001 and for safety reasons, rangers now approach visitors in pairs when contacting them about enforcement issues. It is assumed by staff that any contact with a dog owner regarding dog walking regulation compliance will be confrontational, and it is the park’s goal to reduce the number of these conflicts. There has been one reported physical assault of a federal law enforcement officer by a dog owner (no injuries resulted). Conflicts also occur in the form of verbal abuse at public meetings, and through written correspondence. Park administrators, including the superintendent, have been subjected to such abuses. Park staff have

also been injured from owners not having complete control of their dog. In August 2012, an off-leash dog began barking at a U.S. Park Police Horse-Mounted Officer near the West Bluff area of Crissy Field. The dog then attacked the officer and the horse, attempting to bite the officer's leg and then biting the horse's front leg. The horse reared up and then fell, throwing the U.S. Park Police Officer who sustained a head injury. The dog then chased the horse back to and around the U.S. Park Police stables, totaling approximately one mile in distance. After the attack, the horse was found to have multiple wounds on his legs and underbelly. This horse has been restored to limited duty only (San Francisco Police Department 2012, 1).

Park staff members have been involved in rescues of both dogs and visitors from certain areas of the park, particularly from the coastal bluffs at Fort Funston. Rescues have also been performed at Sutro Heights Park and Baker Beach. Rescues sometimes result in injuries to park rangers and other park employees, including lifeguards. A minimum of three people and at least 1.5 hours are necessary for most rescues. In some cases, both dogs and owners require rescue. Such efforts tax staff capabilities when more than one of these occurs in a short time period, placing staff at elevated safety risk. In addition, staff members are redirected from their existing duties to perform rescues, leaving other regularly patrolled park areas unattended.

GUIDE DOGS

Approximately 8,500 people who are blind or visually-impaired partner with guide dogs to increase their ability to move about safely, effectively, and independently (Kutsch 2011, 1). A philanthropic organization known as The Seeing Eye is a leading expert on advocacy issues related to the safe and effective travel of guide dog teams. In 2011, The Seeing Eye designed a 55-question survey related to guide dog handlers' experiences with attacks and interface by aggressive dogs. Survey results indicated that 44 percent of respondents had experienced at least one attack. Of these 58 percent were attacked more than once. A total of 83 percent of respondents had experienced interface by an aggressive dog. The majority of the attacks or interface occurred on a public-right-of-way including sidewalks and roadways. Results showed that 76 percent of dog attacks were from an off-leash dog, 47 percent were from a leashed dog inadequately controlled by the owner, and 13 percent were from a dog that was tied and left unsupervised. Results from this survey are greater than 100 percent because survey respondents who experienced more than one attack were asked to mark all that applied (Kutsch 2011, 4). Similar results were noted for incidents of interference with dogs. Findings revealed that 64 percent of those who experienced an attack did not report the incident to animal control or police because they did not feel the attack was harmful enough or they were unable to identify the dog or owner. Of those attacked, 35 percent reported changes in their dog's behavior towards other dogs including becoming distracted, aggressive towards other dogs, and fearful of other dogs. During and following an attack, dog handlers can incur physical injuries, become disoriented in their surroundings, and become anxious (Kutsch 2011).

Guide dogs that have been attacked may be unable to work following an attack or may be permanently retired. In the more severe attack cases included in the survey, 16 percent of the guide dogs that were attacked were temporarily unable to work and 2 to 3 percent were retired from service (Kutsch 2011, 6). The costs associated with retiring a guide dog or taking them out of service due to an attack is approximately $50,000 (Kutsch 2011, 2). This includes costs incurred by the guide dog school to breed, raise, and train a replacement dog and instruct the blind person to work with the new dog. Other costs associated with guide dog attacks include veterinary or medical expenses, lost wages, and unexpected transportation costs for the blind person (Kutsch 2011, 2).

During the public comment period for the draft plan/EIS, members of the public described the effects that off-leash dogs can have on guide dogs. One commenter stated, "An unleashed dog rushing the guide dog team can make the guide dog skittish and afraid. That puts the guide dog team at risk. If the guide dog is

more worried about being rushed by another dog, that guide is not doing its job and injury to both the guide dog and guide dog user could occur" (NPS 2011a, Correspondence 277).

Currently, use of service animals within NPS areas is managed according to the NPS Director's memorandum on "Use of Service Animals by Persons with Disabilities in the National Park System," dated September 5, 2002. On April 18, 2014, the NPS published a proposed rule in the Federal Register concerning service animals (79 FR 21876). The NPS expects to publish a final rule governing the use of service animals in the near future.

NEARBY DOG WALKING AREAS

As noted previously, NPS conducted a survey in the summer of 2012, the *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a) to evaluate the perception of and satisfaction with the current dog walking policies, and the potential for redistribution of use based on access changes resulting from implementation of a new dog management regulation for GGNRA. The survey was conducted to respond to public comments received on the draft plan/EIS. Of the approximately 7,000 individuals contacted for the survey, 897 responded, an extremely low response rate. Respondents included 662 dog walkers, 20 commercial dog walkers, and 212 individuals who do not walk dogs at the park. Nearly half of the respondents indicated that their round trip travel to their favorite GGNRA sites is up to 10 miles.

General satisfaction with the visitor's park experience was captured in the survey using the following categories: "not at all satisfied," "slightly satisfied," "moderately satisfied," "very satisfied," and "completely satisfied" (NPS 2012a, 10). Of the dog walkers who responded to the survey, 431 individuals (64 percent) indicated that they were "not at all satisfied," "slightly satisfied," or "moderately satisfied," with on-leash dog walking opportunities at the park (NPS 2012a, 10). These same respondents were then asked if they would go (inside or outside GGNRA) somewhere else as an alternative site. The five most popular alternative sites for on-leash dog walking included four San Francisco park sites, Pine Lake / Stern Grove, Golden Gate Park (all areas), McLaren Park, and Alta Plaza, and one GGNRA site, Marin Headlands Trails (NPS 2012a, 19-21). The Presidio (Area B) was the tenth most popular alternative site for on-leash dog walking, with 1.75 percent (7 respondents) stating that they would choose to visit this site if on-leash dog walking was limited at GGNRA. Regarding satisfaction of off-leash dog walking, 659 respondents (98 percent) stated they would be moderately satisfied or less if they were not able to walk their dogs off leash at the sites they frequent now (NPS 2012a, 17). When asked if they would go somewhere else to walk dogs off leash, the five most popular alternative sites indicated by those respondents for off-leash dog walking included four San Francisco park sites Pine Lake/Stern Grove, Golden Gate Park (all areas), McLaren Park, Alta Plaza, and one GGNRA site, Ocean Beach (NPS 2012a, 13-15). These "alternative sites" are referred to as "nearby dog walking areas" to reduce confusion in the final plan/EIS. After reviewing results of the survey, a list of nearby dog walking areas was created for each GGNRA site. Some of the nearby dog walking areas include other GGNRA sites, and some include areas outside of GGNRA. For example, if on-leash dog walking is limited at Crissy Field, based upon the ranks of the alternative sites in the survey and the driving distance of the alternative site to Crissy Field, visitors may choose to visit (in order of preferred choice in the survey) Alta Plaza Park, Golden Gate Park, Ocean Beach, Baker Beach, or the Presidio (Area B). Similarly, if off-leash dog walking is limited at Crissy Field, the alternative sites in the survey and the driving distance of the alternative site to Crissy Field visitors may choose to visit are (in order of preferred choice in the survey and taking into account immediately adjacent parks) Ocean Beach, Golden Gate Park, Alta Plaza Park, Fort Mason, or Mountain Lake Park. Limitations to this survey included a small sample size of respondents; less than 13 percent of individuals who were contacted responded to the survey. In addition, a high number of answers to the survey questions asking about alternative sites for dog walking recreation were "I don't know," which may support GGNRA's earlier premise that understanding potential redistribution is speculative, a

conclusion other non-federal jurisdictions regulating dog walking, such as the City of San Francisco, have reached (NPS 2012a, 13, 19; SFPD 2011, 262).

Table 32 describes the alternative sites considered in this final plan/EIS. Generally, these alternative sites either ranked high (top ten) in the survey, or were identified in the survey but at a low frequency and are parks located immediately adjacent to GGNRA sites that offer a similar dog walking experience. There are other parks that allow dog walking located outside but near GGNRA sites that are not included in this table because these parks were identified at an extremely low frequency (1 or 2 respondents) or not at all by survey respondents as alternatives sites they would visit. A short description of each of the areas follows that table and includes natural resources present, the location of the area, the size of on-leash and off-leash areas, amenities (if any) present, and recreational opportunities. Additional jurisdictional details about these areas can be found in appendix J.

The following paragraphs describe the nearby dog walking areas identified in the *GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a) and are discussed by county then by study ranking.

TABLE 32. NEARBY DOG WALKING AREAS IDENTIFIED AS ALTERNATIVE SITES IN THE GGNRA DOG WALKING SATISFACTION VISITOR STUDY

Name	Park Management*	Location	Size of Park	Frequency in GGNRA survey (NPS 2012a)	Notes
Marin County Nearby Dog Walking Areas (in order of study ranking)					
Upton Beach	Marin County	Adjacent to Stinson Beach	4 acres	8th preferred choice for off leash (2.4%)	Beach is on-leash dog walking only, but off-leash dog walking may occur here.
Camino Alto Open Space Preserve	Marin County	Mill Valley; Escalon Rd.	170 acres	22nd preferred choice for on leash (1.0%); 19th preferred choice for off leash (0.80%)	Dogs on leash on all trails; dogs off leash on all fire roads under voice command.
Blithedale Summit Open Space Preserve	Marin County	Mill Valley; Glen Dr.	899 acres	23rd preferred choice for on leash (0.75%)	Dogs on leash on all trails; dogs off leash on all fire roads under voice command.
Mt. Tamalpais State Park	CDPR	Mill Valley	6,300 acres	24th preferred choice for on leash (0.75%)	Dogs on leash only in picnic areas and camping areas. No dogs allowed on trails, fire roads, or undeveloped areas.
Bolinas Beach	Marin County and Private Lands	Olema Bolinas Road, off Highway 1	Unknown	Not included as a response in the study	Dogs allowed off leash.
San Francisco County Nearby Dog Walking Areas (in order of study ranking)					
Pine Lake/Stern Grove	SFRPD	Wawona neighborhood; Stern Grove is at 19th Ave. and Wawona; Pine Lake at Wawona Way and Crestlake	64 acres; 3.3 acres (Pine Lake DPA); 0.7-acre (Stern Grove DPA); 0.20 mile trail	1st preferred choice for on leash (12.47%); 1st preferred choice for off leash (14.76%)	Off-leash areas in two DPAs and along the 0.2 mile Stern Grove Trail; this trail connects Pine Lake Meadow to Stern Grove on the north side of the park.
Golden Gate Park (all areas)	SFRPD	Sunset neighborhood; between Sunset and Richmond	1,017 acres; 8.6 acres off-leash DPAs	2nd preferred choice for on leash (9.24%); 2nd preferred choice for off leash (7.2%)	There are four distinct DPA areas in the park (southeast, northeast, south central, and north central) where dogs are allowed off leash. Outside of the DPAs, dogs are allowed on leash, and can be walked on trails at the site.

Name	Park Management*	Location	Size of Park	Frequency in GGNRA survey (NPS 2012a)	Notes
McLaren Park	SFRPD	Bayview neighborhood; Shelly Dr. and Mansell St.	312 acres; 61.7 acres off-leash DPA	3rd preferred choice for on leash (3.49%); 3rd preferred choice for off leash (4.80%)	Two separate DPAs: (1) 59-acre area bounded by Shelly Drive with fence along roadway (2) 0.9 acre adjacent to natural area with fence along roadway.
Alta Plaza Park	SFRPD	Pacific Heights neighborhood; between Scott and Steiner St.	11.9 acres; 0.5 acres off-leash DPA	5th preferred choice for on leash (2.99%); 5th preferred choice for off leash (3.46%)	Leash rule: Off leash in DPA, on leash in the park. Park is a large sloping expanse of grass with some landscaped plantings.
Glen Canyon Park	SFRPD	Glen Park neighborhood; Bosworth St. and Diamond Heights Blvd.	70 acres	9th preferred choice for on leash (2.24%); 7th preferred choice for off leash (2.67%)	Leash rule: Leashes required.
Bernal Heights	SFRPD	Bernal Heights neighborhood; Bernal Heights and Esmeralda	24.3 acres; 21 acres off-leash DPA	10th preferred choice for on leash (1.75%); 10th preferred choice for off leash (1.87%)	DPA located within Bernal Heights Natural Area.
The Presidio (Area B – managed by the Presidio Trust)	The Presidio Trust	Northwest tip of the San Francisco Peninsula; south of Mason St. and east of Lincoln Blvd.	Area B is approximately 1,170 acres	10th preferred choice for on leash (1.75%); 13th preferred choice for off leash (5.0%)	Dogs on leash where allowed in Presidio Area B.
Mountain Lake Park	SFRPD and the Presidio Trust	Richmond neighborhood; Lake St and 12th Ave.	14 acres; 0.4 acres off-leash DPA	19th preferred choice for on leash (0.80%)	East end of the park has a DPA.

Name	Park Management*	Location	Size of Park	Frequency in GGNRA survey (NPS 2012a)	Notes
San Mateo County Nearby Dog Walking Areas (in order of study ranking)					
Montara State Beach (includes McNee Ranch)	CDPR	Montara	Unknown	14th preferred choice for on leash (1.25%)	Dogs allowed on a leash, six feet or shorter.
Quarry Park, El Granada	San Mateo County Department of Parks	El Granada; corner of Santa Maria Ave. and Columbus St.	40 acres (Quarry Park) plus 478 acres added in 2014 (Wicklow property)	14th preferred choice for on leash at Quarry Park (1.25%); Wicklow property added after 2012 GGNRA dog walking satisfaction visitor study	Dogs allowed on leash on trails at Quarry Park; the Wicklow property is dog-friendly.
Half Moon Bay (Surfer's Beach)	CDPR	El Granada; along Highway 1	Unknown	20th preferred choice for on leash (1.25%)	Dogs allowed on leash.
Sharp Park	SFRPD	Pacifica; along Highway 1	Unknown	31st preferred choice for on leash (0.50%)	Dogs allowed on leash.
Pacifica State Beach (at Linda Mar)	City of Pacifica	Pacifica; along Highway 1	Unknown	Last preferred choice for on leash (0.25%)	Dogs allowed on leash on the beach.
Devil's Slide Trail	San Mateo County Department of Parks	Devil's Slide Coast public lands are located between Pacifica and Half Moon Bay	Devil's Slide Trail is a 1.3-mile multi-use trail, converted from a former segment of Highway 1	Area added after 2012 GGNRA dog walking satisfaction visitor study	Dogs allowed on a leash on the trail.
Pillar Point Bluff	San Mateo County Department of Parks	West of Half Moon Bay Airport	140 acres of bluff top	Area added after 2012 GGNRA dog walking satisfaction visitor study	Dogs are permitted on leash on the bluff, but dogs are not permitted on the beach.

Source: NPS 2012a

*Notes: SFRPD = San Francisco Recreation and Parks Department; DPA = dog play area; CDPR = State of California Department of Parks and Recreation

MARIN COUNTY PARKS

Upton Beach—Upton Beach is a 4-acre county-managed beach that is north of the GGNRA portion of the NPS section of Stinson Beach. The beach is popular for sunbathing, fishing, picnicking, and surfing, as well as other beach activities. Kayaking, swimming (but no lifeguard on duty), and dog walking are other activities allowed at the park. The site is frequently used by hang gliders who take off from Mt. Tamalpais. Parking is either at Stinson Beach, or on Calle del Arroyo (Marin County Parks 2012a, 1). Dogs are allowed on leash on Upton Beach, but no dogs are allowed at the adjacent Stinson Beach. The dog leash must not exceed 6 feet in length.

Camino Alto Open Space Preserve—The Camino Alto Open Space Preserve is located in Marin County, and runs from Mt. Tamalpais towards the bay, and branches off south toward Mill Valley. The preserve is predominantly on a west-facing slope, and is well forested, with shady ridgeline access (Marin County Parks 2012b, 1). Vegetation along the fire roads and trails at the Camino Alto Open Space Preserve include coast live oak, California bay, toyon, madrone, coyote brush, monkeyflower, hazelnut, redwoods, buckeye, thimbleberry, and invasive broom. Some portions of the fire roads are lined with patches of buckwheat, and purple coyote mint (Bay Area Hiker 2002, 1). This site provides habitat to support the northern spotted owl, a special-status species. The site also includes ample parking. Many of the fire roads found within the Camino Alto Open Space Preserve are popular, and are used by hikers, bicyclists, and equestrians. The fire roads offer a relatively level trail, and have views of Mt. Tamalpais as well as San Francisco. Dogs are allowed at Camino Alto Open Space Preserve and are allowed to be off leash under voice command on all fire roads. Dogs are also allowed on leash on open space lands unless signed otherwise (Marin County Parks 2012b). Visitors are not allowed more than three dogs per person, and must have a leash for each dog. The leash must not exceed six feet in length. Commercial dog walkers require a permit. Fire roads include the Escalon Fire Road, Del Casa Fire Road, Marlin Fire Road, Camino Alto Fire Road, Octopus Access Fire Road, Middle Summit Fire Road, and Lower Summit Fire Road. There is also the Harvey Warne Trail (Marin County Parks 2012b, 1).

Blithedale Summit Open Space Preserve—Blithedale Summit is an 899-acre open space preserve in Marin County. Resources at the site include a diverse variety of habitats, such as chaparral and forested areas, including redwood groves. The redwood groves provide habitat for the endangered northern spotted owl, as well as other wildlife species. Activities permitted at the site include hiking, horseback riding, and mountain biking (Marin County Parks 2012c). Blithedale Summit has several trails and fire roads. The fire roads are generally steep and rocky along the ridgelines, but trails and roads at the site pass through a variety of habitats. Dogs are allowed at Blithedale Open Space Preserve. Dogs are allowed to be off leash under voice command on all fire roads. Visitors are not allowed more than three dogs, and must have a leash for each dog that must not exceed 6 feet in length. Commercial dog walkers require a permit. Dogs are also allowed on leash on all trails (Marin County 2012c). Fire roads include the South Marin Line Fire Road, the Madera Ridge Fire Road, Glen Fire Road, Elinor Fire Road, the Blithedsale Ridge Fire Road, and H Line Fire Road. Trails include the Corte Huckleberry Trail, Piedmont Trail, Warner Canyon Trail, Tartan Trail, and Maytag Trail (Marin County Parks 2012c).

Mt. Tamalpais State Park—This park is located in Marin County, just north of the Golden Gate Bridge. Mt. Tamalpais has over 50 miles of trails connecting to a network of over 200 miles of trails. The park provides trails for hiking and biking, and some trails for horseback riding. The park contains redwood groves and oak woodlands, and a great diversity of plant life because of the varied habitats, topography, and soils. Hikers are able to pass through grasslands, chaparral, oak woodlands, as well as redwood groves and Douglas fir stands. Serpentine habitat is also located at this park, which supports a number of special-status plant species, including the federally and state-threatened Marin dwarf flax (*Hesperolinon congestum*), the federally and state-endangered white-rayed pentachaeta (*Pentachaeta bellidiflora*), and the federally and state-endangered showy Indian clover (*Trifolium amoenum*) (USFWS 2011b). This site

also provides habitat to support three special-status species: the federally threatened northern spotted owl in terrestrial forested areas, and the federally threatened coho and steelhead salmonids in streams. Dogs are allowed only on leash in the camping and picnic areas, except for the Environmental Campground, and are prohibited from the trails, fire roads, or undeveloped areas (California State Parks 2010, 4).

Bolinas Beach—Bolinas Beach is located in the small, unincorporated West Marin town of Bolinas, famous for a history of removing road signs towards the town. The beach has calm water with a sand bar. Fishing and camping are allowed at the site, and surfing is a popular activity. Dogs are allowed off leash but under control at Bolinas Beach (Dogtrekker 2012a).

SAN FRANCISCO COUNTY

Pine Lake/Stern Grove—Pine Lake Park and Stern Grove Park constitute a total of 64 acres of park land managed by the San Francisco Recreation and Parks Department (SFRPD). The eastern edge of Pine Lake abuts the Stern Grove Park Recreation Area. The Pine Lake Natural Area (8.4 acres) is located in Pine Lake Park (30.3 acres). The area is located in the neighborhood of Wawona in San Francisco County and bounded by Wawona Way on the north and Crestlake Drive on the west and south sides. The Stern Grove area is bounded by 19th Avenue and Wawona way. Riparian habitats and several different types of wetlands are present including open water, willow scrub, and freshwater marsh (SFPD 2011, 286). In general, Pine Lake Park/Stern Grove provides a mosaic of habitats that are accessible to mobile wildlife species, particularly birds that forage, nest, and roost in these habitats (SFPD 2011, 290). There are picnic tables, horseshoe courts, walking trails, and the area is surrounded by fir, redwood, and eucalyptus trees. There is parking along the road and a parking lot within the park. Drinking fountains for visitors and dogs are provided in the park. A designated 3.3 acre unfenced DPA exists in a meadow to the east of the natural area in Pine Lake (SFPD 2011, 141). The DPA is located on the second terrace of the park contiguous to Stern Grove and next to a parking lot at Crestlake and Vale streets. This park also includes the 0.2 mile Stern Grove Trail as an off leash area that connects the Pine Lake Meadow DPA to Stern Grove. Stern Grove also includes a 0.7 acre DPA. This DPA is not within a natural area. The Significant Natural Resource Areas Management Plan (SNRAMP) does not propose to reduce the size of the DPAs at this park or the trail that allows off-leash dog walking.

Golden Gate Park—Golden Gate Park is a 1,017-acre, landscaped park that includes playgrounds, lakes and picnic areas. There are four DPAs in Golden Gate Park that total 8.6 acres. The first is the southeast section bounded by Lincoln Way, King Dr., and 5th and 7th Avenues. This site is approximately 2.6 acres, and is near a natural area. The second DPA is in the northeast section at Fulton and Willard, within a natural area. It is 0.2 acres. The third is the south central DPA bounded by King Dr., Middle Dr., and 34th and 38 Avenues. It is approximately 4.4 acres. The last DPA in Golden Gate Park is in the north central area, near 38th Avenue and Fulton. It is a fenced training area approximately 1.4 acres. All DPAs allow off-leash dogs (SFRPD 2005, 1). Dogs are allowed elsewhere in the park on leash.

McLaren Park—This 312-acre park is managed by the SFRPD and is located in San Francisco's Bayview neighborhood. Numerous freshwater sources, including Gray Fox Creek and associated riparian habitats that consist of willow scrub are present within the park (SFPD 2011, 214). Other habitat present includes wildflower meadows (SFPD 2011, 114), a wet meadow, and a freshwater marsh (SFPD 2011, 286). In general, McLaren Park provides a mosaic of habitats that are accessible to mobile wildlife species, particularly birds that forage, nest, and roost in these habitats (SFPD 2011, 290). There is parking along Shelley Drive and a parking lot located near the reservoir. The park includes two DPAs, one within a natural area and one adjacent to a natural area. The DPA within the natural area is a 59-acre hill top area bounded by Shelly Drive (a fence is present at the roadway) and includes trails, open lawn areas, and a reservoir. The DPA adjacent to a natural area is located at the south entrance of the park, in the 1600 block of Geneva. This DPA includes 0.9 acres of open lawn area and a fence along the roadway. The

SNRAMP proposes to reduce the size of the DPA at McLaren Park from 61.7 acres to 53.4 acres (a reduction of 8.3 acres, approximately 13 percent of total DPA area) (SFPD 2011, 114). The SNRAMP also proposes to restrict dogs from sensitive habitat areas at McLaren Park, including approximately 0.6 acre of Gray Fox Creek (SFPD 2011, 138) and would monitor dog use and impacts on small wildflower meadows in McLaren Park (SFPD 2011, 114).

Alta Plaza Park—This 11.89-acre park is located in the Pacific Heights neighborhood between Steiner and Scott, Clay and Jackson Streets. Originally a rock quarry, the land was terraced and planted with lawn, and has 5 large staircases. The park also contains several paved walking trails, lawns, and benches throughout (San Francisco Parks Alliance 2012, 1). The off-leash area (DPA) is on the east side of the park, and includes the second terrace on Clay Street between Scott and Steiner Streets. It is approximately 0.5 acres. The rest of the park is on leash. Commercial dog walkers are allowed at the park, (City and County of San Francisco Parks and Recreation Department n.d., 1-2; SFRPD 2005, 1).

Glen Canyon Park—This 70-acre park is managed by the SFRPD and located between the Diamond Heights and Miraloma neighborhoods in an area known as San Miguel Hills. Vegetation at the park includes native plants within the grasslands, sensitive species, scrub-covered western slopes, a riparian corridor, a free-flowing creek, and urban forest (SFPD 2011, 125-126; 286). Glen Canyon Park serves as an important wildlife corridor (SFPD 2011, 290). Recreation facilities in Glen Canyon Park include a day camp, a community recreation center, ball fields, playgrounds, and formal and informal trails. In San Francisco, the majority of Islais Creek has been piped into an underground culvert except for an open water stretch in Glen Canyon Park and the bay outfall at Third Street. The Glen Canyon Park reach of Islais Creek is an intermittent stream but supports willows and other riparian vegetation. The creek enters a 5-foot-diameter underground culvert at the lower end of Glen Canyon Park (SFPD 2011, 355). The park has wooded canyon trails along both sides of a creek, rock outcroppings, and a wide variety of native vegetation throughout the site. There are several side trails that climb in elevation and narrow to the top of a hill then loop back down the hill. The SNRAMP proposes to "monitor the dog impact on wetlands and Islais Creek channel and consider appropriate restrictions (including fencing) to keep dogs out of the creek channel and wetlands" (SFPD 2011, 127). The SNRAMP also proposes to protect sensitive habitats and prevent erosion by closing and revegetating social trails in sensitive areas of the Glen Canyon Park, including the social trails at the northwestern rock outcrop (SFPD 2011, 126) and next to or crossing Islais Creek (SFPD 2011, 128). There is no parking lot for the park, only street parking. The park includes a 60-acre natural area (Glen Canyon Park Natural Area) that allows on-leash dog walking. There are no DPAs within Glen Canyon Park.

Bernal Heights—This 24.3-acre park is managed by the SFRPD and is located in the Bernal Heights neighborhood in central San Francisco. The slopes of Bernal Hill support native grasslands and sensitive species while other portions of the site support urban forest (SFPD 2011, 117). The DPA is located in a grassy area with a few scattered trees and scrub vegetation (SFPD 2011, 117). In general, Bernal Hill provides a mosaic of habitats that are accessible to mobile wildlife species, particularly birds that forage, nest, and roost in these habitats (SFPD 2011, 290). There are two main entrances to the park and a large paved path connects a closed utility road. Apart from the paved path, a network of social trails traverses the hill area. There are parking spaces provided and the park includes a designated DPA within a natural area (Bernal Hill Natural Area) above Bernal Heights Boulevard. The Significant Natural Resource Areas Management Plan (SNRAMP) proposes to retain on- and off-leash dog use of the entire natural area but to limit off-leash activities to the relatively flat areas to avoid sensitive plant species (SFPD 2011, 118). The SNRAMP proposes to reduce the size of the DPA at Bernal Hill from 21 acres to 15 acres (a reduction of 6 acres, approximately 29 percent of total DPA area) (SFPD 2011, 114). Additionally, the SNRAMP proposes to "encourage people and dogs to stay on designated trails and discourage them from climbing the steep slopes and causing erosion on the north side of the Natural Area" (SFPD 2011, 118).

Presidio (Area B)—The Presidio (Area B) is managed by The Presidio Trust. The site includes miles of hiking and biking trails, several restaurants, hotel, several neighborhoods, and offices. The Presidio also contains hundreds of listed historic properties. It provides a campground, golf course, bowling center, playgrounds, athletic fields, a trampoline park, rock climbing gym, swimming facilities, gymnastics facilities, four parade grounds, and a visitor center (Presidio Trust 2012a, 1). The park has abundant wildlife and plant communities and supports numerous special-status plant species. Rare plant communities that have disappeared in the rest of the San Francisco peninsula survive within the Presidio; these remnant native plant communities preserve rare and endangered plant species and provide valuable wildlife habitat (Presidio Trust 2002, 1: 7). The Presidio supports water features as well as wetland, riparian, and upland plant communities. Water features present at the Presidio (Area B) include Dragonfly Creek, Tennessee Hollow Creek, and El Polin Spring (Presidio Trust 2002, 1:91). The following wetland and riparian plant communities are present at the Presidio (Area B):

- **Coastal freshwater marsh—**This herbaceous community dominated by emergent wetland plants occurs in areas with perennial inundation or soil saturation in the root zone. It makes up 1.8 acres at the Presidio, including emergent and aquatic vegetation that grow along the edges of Mountain Lake in the South Hills Planning District (Presidio Trust 2002, 1: 88).
- **Freshwater seeps—**These areas are composed of wetland vegetation and occur at sites with seasonal or perennial soil saturation resulting from groundwater seepage. At the Presidio, small seeps and springs occur in northern coastal scrub and on permanently moist or wet soils in the South Hills Planning District and within the East Housing District. The special-status Franciscan thistle occurs only in this community (Presidio Trust 2002, 1:88).
- **Riparian communities—**This community is dominated by native plants, such as willows and alders, that are adapted to moist growing conditions along streams and other drainages (Presidio Trust 2002, 1:88) At the Presidio, riparian vegetation is represented by three native plant communities, including the central coast live oak riparian forest, central coast arroyo willow riparian forest, and the central coast riparian scrub (Presidio Trust 2002, 1:93).

The following upland plant communities are present at the Presidio (Area B):

- **Bluff scrub—**At the Presidio this community is relatively continuous along the steep bluffs facing the ocean from Battery Crosby to south of Fort Point, and along the bayshore from Fort Point to west of Crissy Field (Presidio Trust 2002, 1:93).
- **Northern coastal scrub—**This community occurs at a slightly higher elevation on adjacent gentle slopes and inland areas. Coastal scrub extends inland of bluff scrub from Battery Crosby to west of Crissy Field, and in the south-central portion of the Presidio in the Main Post and residential Planning Districts. The majority of the community mapped as coastal scrub occurs on serpentine soils and could support inclusions of serpentine scrub (Presidio Trust 2002, 1:93).
- **Central dune scrub—**This community includes inland sand dunes dominated by shrubs and annual and perennial wildflowers. The largest remaining patches of dune scrub occur on the bluffs below Lincoln Boulevard south of Battery Crosby, between Lincoln Boulevard and Washington Boulevard, on the restored Lobos Creek dunes north of Lobos Creek, and on sites east of the Public Health Service Hospital (PHSH) north parking lot (Presidio Trust 2002, 1:93). Several special- status plant species, including San Francisco campion, San Francisco wallflower, San Francisco spineflower, dune gilia, and San Francisco lessingia, are found in association with this community (Presidio Trust 2002, 1:94).
- **Serpentine scrub (chaparral)—**This community intergrades with serpentine grassland and serpentine barrens. Small patches of serpentine scrub occur on well-developed serpentine soils

southwest of Crissy Field in the Main Post Planning District, south of the WW II Memorial on either side of Lincoln Boulevard in Area A, and the South Hills Planning District (Presidio Trust 2002, 1:94).

- **Serpentine bunchgrass grassland (prairie)—**This community is dominated by sensitive grass- and herbs and restricted to well-developed serpentine soils in more protected, drier, less windy, and more sunny uplands. On the Presidio, the serpentine bunchgrass community occurs within the South Hills Planning District (Presidio Trust 2002, 1:94).
- **Coast live oak woodland—**This community develops in moist, sheltered sites away from the immediate coast. Only small, scattered stands of coast live oaks with an understory of shrubs or grass occur on the Presidio (Presidio Trust 2002, 1:94).

A total of 10 special-status plant species are known to occur on the Presidio (Area B) in the plant communities described above, including dunes, dune scrub, coastal scrub, bluff scrub, serpentine scrub, serpentine barrens, and serpentine grasslands (Presidio Trust 2002, 1:96). Four federally listed plants occur on the Presidio (Area B), including the federally endangered Raven's (Presidio) manzanita, Presidio clarkia, and San Francisco lessingia; one federally threatened plant species, the Marin dwarf-flax also occurs on the Presidio (Presidio Trust 2002, 1:94). A large area in the southwestern portion of Area B is designated as a San Francisco lessingia recovery zone. The site also contains high ecological value forest stands and a 300-acre forest of eucalyptus, cypress, and pine. Although not native to the area, this forest was planted at the end of the 19th century. Other historic gardens are also found in the park.

Hundreds of wildlife species use habitat in the park (Presidio Trust 2012b, 1). Common mammals such as opossums, skunks, and raccoons as well as numerous species of bats have been recorded at the Presidio (Presidio Trust 2002, 106). There is also a mapped occurrence of the federally threatened California red-legged frog at Mountain Lake. GGNRA has developed plans to restore several areas for the federally listed frog, including Mountain Lake in the Presidio (USFWS 2002, 32). Common amphibians and reptiles at the Presidio (Area B) include the non-native red-eared slider and the bullfrog (Presidio Trust 2002, 106). The lands at the Presidio also support a wide variety of avian species. The waterbody known as Mountain Lake in Area B supports shorebirds such as terns, kingfishers, ducks, and gulls as well as neotropical migrants such as songbirds, swallows, and flycatchers (Presidio Trust 2002, Figure 22). The more wooded portions of Area B support hawks, vultures, flycatchers, owls, swallows, songbirds, and woodpeckers; the open portions (scrub and lawn areas) of Area B support flycatchers, songbirds, quails, and swallows (Presidio Trust 2002, Figure 22). The Presidio provides an important refuge for the California quail because it is a small, non-contiguous parcel where quail numbers had historically declined. The Presidio currently supports a breeding population of California quail, which is mostly found in coastal scrub areas, in forests, lawns, and areas of ornamentals.

In terms of dog use, the rules of the Presidio state that dogs are allowed on leash in nearly all areas (Presidio Trust 2012a, 1). The Presidio Trust has specifically stated in a public comment letter on the draft plan/EIS that Area B contains approximately 20 miles of trails and 685 acres of developed areas available for on-leash dog walking. The Presidio Trust also indicates that the following trails in Area B have a high percentage of use by dog walkers (visitors walking dogs is greater than 30 percent): Mountain Lake Trail (Arguello Blvd. to Mountain Lake), Ecology Trail (near the South Hills housing), West Pacific Trail (Broadway Gate to Arguello Gate), the Lombard Gate Lawn, and the Bay Area Ridge Trail (Spire to Rob Hill Campground). Trails at the Presidio that have a moderate percentage of use by dog walkers (visitors walking dogs is between 10 and 30 percent) include: El Polín Spring (near East housing), Park Trail (bisects the site from the Public Health Service District to Cavalry Stables), Fort Scott Ball Field and Parade Ground (in the northwestern portion of the site), Lobos Valley Connector and South Baker Beach Apartments Social Trails (Wedemeyer St. to Lincoln Blvd.), and the Public Health Service District/Hospital Cemetery (in the southwestern portion of the site). The remaining trails/areas within

Area B have a low percentage of use by dog walkers (visitors walking dogs is less than 10 percent). The Presidio Trust adopted the final rule for their interim program imposing a public use limit on persons (commercial dog walkers) who are walking four or more dogs at one time in Area B of the Presidio. The limit would require commercial dog walkers in Area B to possess a valid commercial dog walking permit issued by the NPS and to comply with the terms and conditions of the NPS permit as well as those rules and regulations otherwise applicable to Area B. These actions are interim and will remain in effect until the final special regulation for dog walking in GGNRA is adopted, at which time the Trust expects that it will adopt a final rule following public input and comment.

Mountain Lake Park—This 14-acre park is managed by the SFRPD and located in the Richmond neighborhood of San Francisco at 12th and Lake Avenue. Mountain Lake Park is located next to Mountain Lake, which is part of the Presidio and is managed by the Presidio Trust. The park has two meadows; the large meadow is generally used for picnics and sports. Several trails can be accessed from the area. Dog walking, picnicking, and hiking are popular activities in the park (The Presidio Trust 2012c, 3). The park provides opportunities for visitors to walk or jog along the lake, although the lake is technically part of the Presidio (Area B). The Presidio Trust noted in a public comment letter to the draft plan/EIS that the Mountain Lake Trail and the Ecology Trail at the park are frequently used by dog walkers (NPS 2011b, Presidio Trust).There is also a built-in fitness circuit along the trails in the park. Mountain Lake contains wetland areas, and provides habitat for wildlife, although many of the species currently found are non-native (The Presidio Trust 2012c, 3). On-leash dog walking is allowed in the park and off-leash dog walking is allowed in the 0.4 acre, unfenced DPA located at the northeast end of the Park, which is a combination of grass and woodchips (SFRPD 2005, 1; FMLP 2012, 1).

SAN MATEO COUNTY

Montara State Beach (includes McNee Ranch)—Montara State Beach is in San Mateo County in the community of Montara. The beach at Montara is wide and sandy, and is about 0.8 mile long. Montara Beach has two steep access points (California State Parks 2012, 1). While there are diverse tidepools on the southern end of the beach, they are largely inaccessible. Seals occasionally haul out at Montara State Beach (CSPA 2012, 1). Montara Mountain (also known as McNee Ranch), is also within this state park. McNee Ranch is located across Highway One from the beach, on the west side of Montara Mountain. It features the only undisturbed coastal mountain habitat found on over 100 miles of coastline, and provides a rich diversity of flora and fauna. The site offers hiking, biking, horseback riding, and walking trails (CSPA 2012, 1). Dogs are allowed on leash on the beach, but must be controlled with a leash of no more than six feet. They are also allowed on leash on the trails at McNee Ranch (CSPA 2012, 1).

Quarry Park, El Granada—Quarry Park is a 40-acre community park in El Granada, south of San Francisco. Trails provide a hike through the old quarry, and some vistas of the surrounding area and Princeton Harbor. The trail is open to horses, hikers, and bicyclists (County of San Mateo 2012, 1). Dogs are allowed on leash at Quarry Park (County of San Mateo 2012, 1). The Wicklow property was added to Quarry Park in 2014. It includes 478 acres of grassy hillsides, coastal ridges, a massive eucalyptus forest and pine and cypress groves (County of San Mateo 2016c, 1). There is a system of trails throughout the property that connect to the playground, restroom and parking lot already present at Quarry Park. Trails within the Wicklow property pass through meadows, forests and the quarry floor, and lead to a lake and a raised boardwalk at the harbor view vista point. The Wicklow property (as well as the grassy fields adjacent to the playground at Quarry Park) is dog-friendly and even includes a dog station in the parking lot (County of San Mateo 2016c, 1).

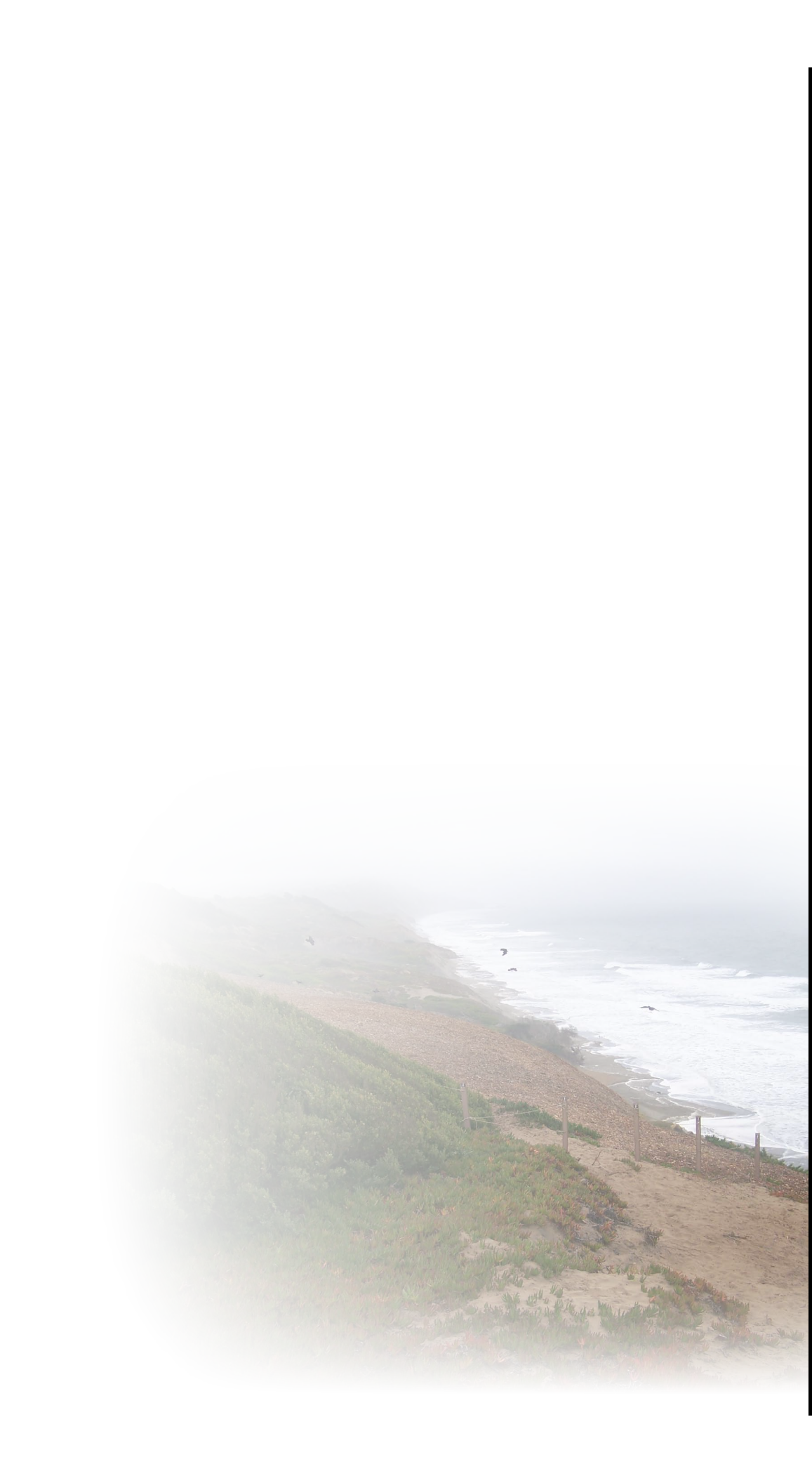
Half Moon Bay (Surfers Beach)—Surfers Beach, or El Granada beach, is located across from the town of El Granada. It is a popular surfing beach, with easy access and good waves (HiddenSF.com 2012, 1). However, in recent years this beach has seen severe erosion that threatens to undermine highway 1, and

severely limits recreational activities at the beach (CSMW 2012, 1). The plant communities of Half Moon Bay are not as diverse as they were when the coast was pristine due to the introduction of non-native plant species such as sea fig, cape ivy, New Zealand spinach and poison hemlock; these non-native plants have affected the survival of native plants and animals (California State Parks 2005, 4). The most common birds at Half Moon Bay Beach are migratory and resident water-associated birds such as western snowy plovers (which are known to nest at Half Moon Bay); western California and glaucous-winged gulls; brown pelicans; and sanderlings (California State Parks 2005, 4). Dogs are allowed on leash at Surfers beach (California State Parks n.d., 1).

Sharp Park—This 411-acre park is managed by the SFRPD and located in the town of Pacifica in San Mateo County. The park borders the Pacific Ocean, is bisected by Highway 1 and is surrounded by significant open spaces. GGNRA areas adjacent to Sharp Park are Mori Point on the southwestern edge and Sweeney Ridge on the southeastern and eastern edges. The dominant vegetation at Sharp Park includes invasive forest and maintained lawns associated with a golf course, but the park also contains significant areas of wetlands and scrub vegetation associated with Sanchez Creek and Laguna Salada near the Pacific Ocean (SFPD 143). Several different types of wetlands are present including free-flowing creeks, open water, wet meadow, willow scrub, and freshwater marsh (SFPD 2011, 286). The wetland habitats of Sharp Park support several sensitive species including common yellowthroats, black-crowned night herons (*Nycticorax nycticorax*), California red-legged frog, San Francisco garter snakes (*Thamnophis sirtalis elegans*), and San Francisco forktail damselfly. Because Sharp Park is bordered by or adjacent to undeveloped areas, including Sweeney Ridge, Mori Point, and Milagra Ridge, it serves as a relatively undisturbed corridor for wildlife, particularly birds (SFPD 2011, 290). Sharp Park's connectivity to high-quality natural habitats also allows it to support medium size and large mammals, including numerous general wildlife species, such as the black-tailed deer (*Odocoileus hemionus columbianus*), bobcat (*Lynx rufus californicus*), common porcupine (*Erethizon dorsatum*), coyote (*Canis latrans*), and mountain lion (*Puma concolor californicus*) (SFPD 2011, 290). On-leash dog walking is allowed at the park; there are no off-leash dog areas within Sharp Park. This park was identified as an alternative site for on-leash dog walking, although at a very low frequency (NPS 2012a, Attachment B). Because Sharp Park does not include a DPA, acreage of DPAs would not be reduced in the SNRAMP, but signs and barriers would be installed and maintained to prevent disturbance of sensitive habitat in Horse Stable Pond and Laguna Salada by "dogs or other possible nuisances" (SFPD 2011, 144).

Pacifica State Beach—The Pacifica State Beach, also known as Linda Mar Beach, operated by the City of Pacifica, is located south of San Francisco in Pacifica. The beach is located off of Highway 1 in downtown Pacifica. Amenities at Pacifica beach include a recreational trail system along the water, surfing and surf camps, as well as parking, showers, and restrooms (City of Pacifica 2012, 1). Pacifica Beach is home to large numbers of shorebirds, including the federally threatened western snowy plover. There is also a small wetland on the southern portion of the beach that provides wildlife habitat, and the beach is listed as habitat for the western snowy plover in the USFWS recovery plan (Pacific Shorebird Alliance 2012, 1). Dogs must be on leash at this beach (City of Pacifica 2012, 1).

San Mateo County Park (Devil's Slide Trail and Pillar Point Bluff)—Devil's Slide Trail is a multi-use trail converted from a former segment of Highway 1. This trail segment is 1.3 miles of trail connected to the California Coastal Trail which will extend 1,200 miles from Oregon to Mexico when completed (County of San Mateo 2016, 2). This trail requires that dogs are kept on-leash as bicyclists, equestrians, hikers, and runners are also using the trail (County of San Mateo 2016a, 1). Pillar Point Bluff is a 140-acre bluff top that includes a section of the California Coastal Trail and offers views of Half Moon Bay Harbor, agricultural lands and the Mavericks surf break. Dogs are permitted on-leash on the bluff, but dogs are not permitted on the beach (County of San Mateo 2016b, 1).



Environmental Consequences

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential environmental consequences of implementing any of the alternatives being considered. It is organized by resource topic and provides a standardized comparison among alternatives based on topics described in chapter 1 and further described in chapter 3. In accordance with the *National Environmental Policy Act of 1969* (NEPA), impacts are described in terms of context, intensity, and duration; cumulative impacts and mitigating measures for adverse impacts are also described. The analysis for each impact topic includes the methods used to assess the type and relative level of impact. In addition to determining the environmental consequences of implementing the preferred and other alternatives, National Park Service (NPS) *Management Policies 2006* (Section 1.4) requires analysis of potential effects to determine whether or not proposed actions would impair a park's resources and values.

INTRODUCTION: GENERAL METHODOLOGY FOR ANALYZING IMPACTS

Potential impacts or effects are described in terms of type, context, duration, and intensity, which are generally defined below, while more specific impact thresholds are given for each resource at the beginning of each resource section. A threshold is the point that must be exceeded to begin producing a given effect or result or to elicit a response. For the analysis, context, duration, and intensity have been categorized into negligible, minor, moderate, and major and are defined in more detail in each resource section. Negligible impacts are neither adverse nor beneficial, nor long-term or short-term. No impacts to a resource may also be applicable for some alternatives and sites if dogs are prohibited. NPS realizes that other park uses such as biking, hiking, beach driving, and special events (i.e., Fleet Week) create impacts to park resources; however, direct impacts described in this chapter focus on impacts related to dog walking.

Type of Impact—Impacts can be either beneficial or adverse. A beneficial impact would be a positive change in the condition or appearance of the resource. An adverse impact would be a change that would detract from its appearance or condition.

Context—Context describes the area or location (site-specific, local, parkwide, or regional) in which the impact would occur. Site-specific impacts would occur at the location of the action, local impacts would occur within the general vicinity of the study area, parkwide impacts would affect a greater portion of the park, and regional impacts would extend beyond park boundaries, which in coastal Golden Gate National Recreation Area (GGNRA or park) sites extend beyond the tideline.

Duration—Duration describes the length of time an effect would occur, either short term or long term. Long-term impacts are described as those persisting for the life of the plan/environmental impact statement (EIS) (the next 20 years). At the beginning of the plan's implementation, a 1- to 3-month period of public education would occur to implement the proposed action followed by a 1- to 3-month period testing the monitoring-based management strategy. At the beginning of the education and enforcement period, short-term impacts on all resources would occur, regardless of the alternative chosen. During this period, impacts would be similar to the current conditions and would be short-term. Following the education period, monitoring for compliance would begin and it is expected that compliance with the dog walking regulations and associated adverse impacts would improve gradually and the impacts would then become long term, as described below for each resource and alternative.

Intensity—Intensity describes the degree, level, or strength of an impact. Because definitions of intensity vary by resource topic, intensity definitions are provided separately for each impact topic.

Direct and Indirect Impacts—NPS policy requires that direct and indirect impacts including cumulative be considered in the analysis of alternatives, but the impacts do not have to be specifically identified as either direct or indirect. A direct effect would occur at the same time and place as the action. An indirect effect would be caused by an action but would be later in time or farther removed in distance, but would still be reasonably foreseeable.

Compliance with New Rule—As noted above under "Duration," this analysis assumes that a short period of time would be needed for education and outreach after the new rule is implemented, to familiarize visitors with the new rule. After this initial period, the impact analysis for each alternative assumes compliance with the requirements of the alternative.

One of the stated purposes of this plan is to "provide a clear, enforceable dog management policy" ("Purpose of Taking Action" section in chapter 1). The need for a clear, enforceable policy was further expressed as an objective of the plan ("Objectives" section in chapter 1):

- Maximize dog walker compliance with clear, enforceable parameters in order to improve park operations and use of staff resources in managing dog walking.

The lack of compliance with the existing policy has been documented in the sections discussing law enforcement data on dog-related incidents at GGNRA. NPS recognizes this as a concern and, as such, included enforceability as a stated purpose and objective of the new policy. The alternatives were developed with this purpose and objective in mind, and have been developed so as to be enforceable. The Management-Based Monitoring Program was included as common to all action alternatives to enhance compliance. If the selected alternative does not achieve compliance in specific areas, the Monitoring-Based Management Program includes additional measures to encourage compliance and to protect resources as needed.

For these reasons, the impact analysis assumes compliance with the alternatives evaluated.

Law Enforcement Data—Law enforcement data from 2001 through 2011, presented in the "Visitor Use and Experience" section in chapter 3, was used to demonstrate the types of noncompliance documented at each site. Table 5 shows the yearly and cumulative number of dog incidents at the park compared to other park incidents or violations. These data were taken from the annual summary reports for each year. From 2001 through 2011, a total of 4,932 dog-related incident reports were filed. Dog-related incident reports comprised 11 percent of the total number of incident reports filed for incidents on GGNRA lands between 2001 and 2011. Park incidents are undercounted in some categories, including dogs-related incidents, because the annual summary report does not account for incident reports that may include more than one violation. Incident reports related to dogs for the years 2008 through 2011 were reviewed to determine the type and number of dog incidents at each site. As noted previously, some of the incident reports documented multiple violations (e.g., unleashed dog in a closed area) or documented violations by more than one individual. Tables 12–30 show the types of dog incidents at each site per year; these data include the multiple violations contained in some of the dog-related incident reports.

Dog-related incidents from 2012 through 2016 were categorized and collected differently than those from 2008 through 2011. The different categorization resulted from a NPS servicewide change in law enforcement reporting and tracking software and its implementation. From 2012 through 2016, GGNRA NPS rangers and U.S. Park Police (law enforcement staff) recorded a total of 1,066 dog-related incidents for animal complaints, dog bites, dog walkers in closed areas, violations of the leash law, dog/wildlife interactions and resource violations. Of these citations, 232 occurred at Marin Headlands, 157 at Fort

Funston and 156 at Ocean Beach. A total of 421 reports of leash law violations, 165 dog walkers in closed areas, and 289 animal complaints were recorded by GGNRA law enforcement staff between 2012 and 2016. Tables 12b through 30 show the types of dog incidents at each site per year from 2012 through 2016.

After the 1979 Pet Policy was declared contrary to the NPS leash regulation (36 CFR 2.15(a)(2)) in 2001, law enforcement staff regularly enforced the NPS leash law regulation between 2002 and 2005. Following the 2005 court order affirming that GGNRA cannot enforce the NPS-wide regulation requiring on-leash walking of pets (36 CFR 2.15(a)(2)) in areas that were included in the 1979 Pet Policy, dog incidents and violations decreased due to the confusion over the pet policy, but increased again following the emergency restrictions and then the promulgation of a special regulation to protect the western snowy plover.

Law enforcement is responsible for covering approximately 80 miles of separate, non-contiguous park sites in three counties. There are approximately nine law enforcement staff and U.S. Park Police monitoring sites per shift; therefore, law enforcement must strategize which sites to assign staff to each shift. Low use sites and small sites are generally not heavily patrolled due to staff limitations. For these reasons, it is likely that if more staff were available there would be an increase in the number of incidents and violations at the park. While GGNRA cannot provide an exact number of incidents that go unreported, even if law enforcement data undercounts incidents, the data substantiates a need to regulate dog walking to protect resources, diverse visitor experiences, and health and safety.

MONITORING-BASED MANAGEMENT PROGRAM

A monitoring-based management program is included as common to all action alternatives. The monitoring-based management program has been designed to encourage compliance with sections of the CFR applicable to dog management, and ensure protection of park resources, visitors, and staff. All areas open to dog walking, including voice and sight control areas (VSCAs), would be subject to the monitoring-based management program. This impact analysis assumes compliance. Therefore, the monitoring-based management program, which is designed to encourage compliance, would not result in new or different impacts than those analyzed for each alternative for natural and cultural resources. If compliance cannot be achieved under the selected alternative, the monitoring-based management program includes management responses to protect resources and further encourage compliance. Some of the management responses could impact visitor experience, especially for visitors who prefer to walk dogs in GGNRA. Impacts of the program on visitor experience are therefore evaluated in the “Visitor Use and Experience” section of this chapter.

CUMULATIVE IMPACT SCENARIO

The Council on Environmental Quality (CEQ) regulations that implement the provisions of NEPA require that cumulative impacts be assessed in the decision-making process for federal projects. Cumulative effects are defined by the CEQ regulations as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative effects can result from individually negligible (or minor), but collectively significant, actions taking place over a period of time. The cumulative impact analysis includes actions both inside and outside the boundary of the park. Cumulative impacts were determined by combining the impacts of each alternative with other past, present, and reasonably foreseeable future actions within the park and outside the boundary of the park.

A list of past, present, and reasonably foreseeable future actions, projects, and programs within the park and outside the boundary of the park were compiled for consideration in the cumulative impact analysis. This list is included in appendix K. The list is organized by plans and projects that have been completed, current projects that are underway, long-term projects, and future projects. From this list projects and actions were pulled out and discussed as applicable under each resource and site. The park stewardship programs are incorporated in this list and include programs performed by the Trails Forever Program and volunteer programs.

The lands in San Francisco known as the "Presidio" are managed by both the NPS and the cooperating agency for this plan, the Presidio Trust. Congress established the Presidio Trust in 1996, which together with the NPS manages the Presidio lands. The Presidio Trust manages the interior 80 percent of the Presidio (known as Area B) and the NPS manages the Presidio's coastal areas (known as Area A). This chapter considers direct impacts to Area A Presidio lands managed by NPS. This chapter also considers indirect impacts of the alternatives on adjacent lands in the cumulative impacts scenario, including Area B Presidio lands managed by Presidio Trust.

Interim Compendium Amendment

The NPS issued an interim compendium amendment requiring commercial dog walkers in San Francisco and Marin counties to obtain a permit if walking more than three dogs on GGNRA lands and limiting them to no more than six dogs. This interim change was considered in light of the City of San Francisco's 2012 ordinance requiring commercial dog walkers to obtain a permit, which would limit them to no more than eight dogs. GGNRA's interim amendment is not part of the dog management plan/EIS, and will remain in place only until a final rule, which would address commercial dog walking, is issued. Because the final rule would address permitted dog walking, this is only evaluated as a cumulative effects project for alternative A, no action. Other alternatives evaluate a permit program as part of the alternative (alternatives C, E, and F) or purposely do not include a permit program (alternatives B and D).

This change may cause adverse effects on nearby dog walking areas if commercial dog walkers who want to walk more than six dogs choose to go to areas outside GGNRA. However, given that nearby jurisdictions that allow commercial dog walking require permits, and limit the maximum number of dogs per dog walker to either six or eight dogs, there may be little effect on other areas. Without this interim action, GGNRA lands, where there is currently no permit required and no limit on the number of dogs walked by commercial dog walkers, would be more likely to be adversely impacted, as commercial dog walkers wanting to walk more than six to eight dogs would likely increase dog walking on GGNRA lands. This interim change will likely preserve the current distribution of commercial dog walking, although the number of dogs per commercial dog walker would be reduced for those currently walking more than six dogs at a time on GGNRA lands. While the redistributional effect of requiring permits for commercial dog walkers is somewhat speculative, the interim compendium amendment is more likely to preserve the current visitor experience, or possibly improve it by reducing the number of dogs per commercial dog walker.

Increasing Visitation

The temporal scope of this final plan/EIS has been defined as 20 years. As previously discussed in chapter 3, visitation to GGNRA is not expected to experience a significant increase in visitation over the next 20 years given the overall visitation trends to the park. Assuming there are no major changes in park boundaries or facilities, park visitation would range between 12.8 million to 15.8 million people annually, similar to how it has been operating over the previous 20 years. Therefore increased visitation to GGNRA should not result in cumulative impacts to GGNRA resources.

IMPACTS ON NEARBY DOG WALKING AREAS OUTSIDE OF GGNRA BY ALTERNATIVE

During public review of the draft plan/EIS, several commenters, including the Environmental Protection Agency (letter dated May 27, 2011) noted that additional analysis was needed to better understand where visitors might go if they are unable to walk their dogs at GGNRA as a result of this new regulation. In response to these comments, and in an effort to address any incomplete or unavailable information, new analysis was completed to better understand this question and is presented here. As part of the process to better understand and document these potential impacts, NPS sponsored a survey, described in detail in the text that follows.

Under this final plan/EIS, there are several potential impacts to resources that would occur as a result of projected increases in dog walking at nearby dog walking areas outside of GGNRA. Impacts to natural resources, visitor experience, visitor safety, and park operations (maintenance and cost) are expected to occur and are generally discussed in the paragraphs that follow and in more detail by each alternative below. This analysis is not repeated for each site and resource topic, but these impacts were considered when the cumulative effects were analyzed in resource sections.

As noted in chapter 3 in the "Visitor Use and Experience" section, an assessment for the economic analysis of the proposed rule (IEC 2016), using multiple sources of data, estimated that dog walkers comprise approximately 10–12 percent of visitors at areas included in this final plan/EIS. It is likely that an increase in the level of recreational use by private and commercial dog walking would occur at nearby dog walking areas outside of GGNRA as a result of this final plan/EIS. However, it is speculative to precisely identify all potential impacts from redistribution related to the implementation of this final plan/EIS in combination with other projects. For example, the reductions in off-leash areas proposed by the Significant Natural Resource Areas Management Plan (SNRAMP), the changes in commercial dog walking proposed under this final plan/EIS and at The Presidio (Area B), the possible future changes in the City of San Francisco, and the existing restrictions to commercial dog walking in Marin County Open Space lands would all affect where people walk their dogs in the greater San Francisco area, specific impacts of these various efforts are impossible to predict. Therefore, it is unknown exactly where the redistribution of visitors would occur if dog walking opportunities are limited at GGNRA sites under this final plan/EIS. To reduce this speculation, the NPS tailored a survey (*GGNRA Dog Walking Satisfaction Visitor Study* (NPS 2012a)) to collect current and detailed information regarding visitor use of the park by dog owners, and to determine where visitors would otherwise likely go given different levels of restrictions. This survey specifically targeted dog walkers and other visitors that would be affected by this final plan/EIS. Unfortunately the survey had a low response rate. Of the approximately 7,000 individuals contacted, only 897 individuals responded to the survey. Respondents included 662 dog walkers, 20 commercial dog walkers, and 212 individuals who do not walk dogs at the park (NPS 2012a, 6). As noted, limitations to this survey included a small sample size of respondents; less than 13 percent of individuals who were contacted responded to the survey. In addition, a high number of answers to the survey questions asking about alternative sites for dog walking recreation were "I don't know." This response demonstrates that even individuals affected were unable to identify where they might otherwise go for on-leash or off-leash dog walking opportunities. Nonetheless, this final plan/EIS did use the results of this survey in the redistribution analysis as the best available information, because the survey targeted affected visitors of the GGNRA. But as noted, even many of the affected visitors who responded to the survey did not know exactly how this final plan/EIS would affect them in the future and where they would go as a result. Numerous factors are difficult to presume, including human behavior, level of restrictions within and outside GGNRA lands, and physical factors such as driving distances. These statements describe GGNRA's premise that understanding potential redistribution is speculative, a conclusion that other non-federal jurisdictions regulating dog walking, such as the City of San Francisco, have reached as well (NPS 2012a, 13, 19; SFPD 2011, 262). That said, GGNRA used the best available data to determine where GGNRA visitors may go as a result of this final plan/EIS and the impacts

associated with this redistribution analysis, including evaluating other nearby dog walking areas outside of GGNRA where dog walkers may be more likely to relocate. The paragraphs below summarize some of the general impacts associated with the redistribution. A detailed impacts analysis follows by alternative.

Increased visitation at nearby dog walking areas could degrade natural resources, such as causing vegetation trampling by dogs, resulting in damaged plant and root systems. Damaged vegetation may cause bare areas and increase the potential for erosion during rain events. Wildlife associated with habitat at these areas would be adversely impacted from an increase in disturbance from greater numbers of dogs and visitors at these areas. An increase in dogs may lead to a greater number of incidents of wildlife being chased, disturbed, or injured. Some of these areas also contain sensitive species that may be adversely impacted from the higher number of dogs and dog walkers at these sites. At these areas, dogs are not allowed in wetlands or waterbodies (such as streams or lakes), but there would likely be more dog waste with the increased visitation, which would have adverse impacts on health, visitor experience, aesthetics, and on the natural resources at the site. If waste is not properly collected, rain events could wash pet waste into adjacent waterbodies and affect water quality. Therefore, increased maintenance at these areas may be necessary for control of additional dog waste. In Marin County and San Francisco County, there are no comparable, off-leash beaches at non-GGNRA areas. Therefore, the lack of off-leash beaches at nearby dog walking areas would adversely impact the visitor experience for some visitors. Overcrowding due to dog walkers moving to off-leash areas in general can degrade visitor experience and jeopardize visitor safety. During the public comment period for the draft plan/EIS, many commenters noted that crowding dogs into smaller areas for off-leash dog walking would result in more dog aggression, with more dogfights and altercations. An increase in dog walking use would also create traffic and parking issues, since some areas do not have designated parking lots, but street parking options only. The availability and maintenance of other amenities may also be an issue, such as public restrooms or water fountains. Maintenance in general and law enforcement issues could also arise at nearby dog walking areas as a result of increased use, adversely affecting the operations of these parks.

Under this final plan/EIS, commercial dog walking would be allowed under alternative B, but dog walkers may not have more than three dogs. Under alternative D, no commercial dog walking would be allowed and no permits would be available for application. Under alternatives C, E, and F, commercial dog walking would be allowed, and dog walkers, both commercial and private, would be able to apply for a permit to walk up to six dogs at the following seven GGNRA sites: Alta Trail, Rodeo Beach, Fort Baker (excluding Drown Fire Road), Fort Mason, Crissy Field, Baker Beach, and Fort Funston. In Marin County, the GGNRA proposed limit on the number of dogs able to be walked at one time by a dog walker is the same as the dog walking permit limit imposed by the Marin County Open Space District (except that only three of the six dogs are allowed off leash in permitted off-leash areas), so no redistribution to nearby areas is anticipated. However, commercial dog walkers who currently use GGNRA lands in San Francisco may choose to walk dogs on land owned by the City of San Francisco. The City of San Francisco currently allows and will continue to allow commercial dog walkers on their lands. However, in 2012, the San Francisco Board of Supervisors passed an ordinance that, starting in 2013, will require commercial dog walkers to obtain a permit to walk four or more dogs, with a limit of eight, on City of San Francisco park property (including some lands managed by the Port of San Francisco and by the San Francisco Public Utilities Commission). This maximum number of eight dogs is higher than the proposed limit of six dogs at selected GGNRA sites under this final plan/EIS. Therefore, the commercial dog walking limits proposed under this final plan/EIS, being lower than the maximum number of dogs allowed in San Francisco would possibly result in the movement of commercial dog walkers in San Francisco from GGNRA lands to other nearby dog walking areas. Additionally, the NPS implemented an interim compendium agreement that required commercial dog walkers at GGNRA sites to obtain a permit to walk more than three dogs, with a limit of six dogs. This was done to alleviate any movement of commercial dog walkers to GGNRA as a result of increased restrictions under San Francisco's recent ordinance, but may possibly increase impacts at other dog walking areas in proximity to the GGNRA. The

number of commercial dog walking permits issued under the interim program was fairly consistent, 176 permits in 2014, 179 permits in 2015, and 163 permits in 2016. Thus under alternatives B through F, the GGNRA proposed rule may result in additional impacts on natural resources, visitor use and experience, and park operations at nearby dog walking areas in San Francisco.

In addition to the GGNRA proposed limits on commercial dog walking, implementation of the proposed SNRAMP (SFPD 2011) may further restrict dog access and off-leash areas in San Francisco, including Lake Merced and other natural areas. The SNRAMP proposes to permanently close the Lake Merced dog play area (DPA) (loss of 5 acres) and reduce the size of the DPAs at Bernal Hill (by 6 acres) and McLaren Park (by 8.3 acres) (SFPD 2011, 114). A total of 19.3 acres of off-leash areas would be lost as a result of the SNRAMP, though on-leash dog walking would still be allowed. There are 120 acres of existing DPAs in San Francisco (appendix J) and the SNRAMP would reduce this total by over 20 percent (SFPD 2011, 463). In addition to restricting and closing DPAs, the San Francisco Recreation and Park Commission has directed that no new DPAs are to be established until system-wide DPA planning is completed (SFPD 2011, 105). The combined reductions in off-leash areas proposed by both the SNRAMP and this final plan/EIS could result in an increase in dog use at the remaining DPAs managed by San Francisco Recreation and Parks Department (SFRPD), as well as other dog walking areas.

IMPACT THRESHOLDS

Impacts to nearby dog walking areas were determined by examining the potential effects of how this final plan/EIS would cause dog walkers to relocate and use other, non-GGNRA dog walking areas. The impacts of these dog walking activities were conducted through a qualitative analysis of changes to natural resources, visitor use and experience, visitor safety, and park operations (including maintenance and cost) at the nearby dog walking areas. The thresholds that have been applied to these individual resource sections have been used in this analysis of impacts to the nearby dog walking areas. The intensity of each adverse impact is judged as having a minor, moderate, or major effect. Negligible impacts are neither adverse nor beneficial. No impact on nearby dog walking areas may also be applicable, as noted. Detailed impacts on natural resources, visitor use and experience, and park operations at each of the nearby dog walking areas are described the first time the park is introduced but referenced to thereafter to reduce redundancy.

NEARBY DOG WALKING AREAS IMPACT ANALYSIS BY ALTERNATIVE

Alternative A: No Action. Under alternative A, dog walking (both on-leash and under voice and sight control) would remain the same at all GGNRA sites. Visitors who currently walk their dogs or use VSCAs at GGNRA sites would have no reason to move to nearby dog walking areas under alternative A. As a result, alternative A would have no impact on the natural resources, visitor use and experience, or health and safety at these nearby dog walking areas.

Alternative B: NPS Leash Regulation. Alternative B represents the NPS-wide approach to dog walking, with no VSCAs being proposed at any of the GGNRA sites. It also includes the closure of a few sites to both on and off-leash dog walking. The GGNRA sites that are currently most heavily used for off-leash dog walking are Alta Trail (high commercial use), Muir Beach, Rodeo Beach, Crissy Field, Baker Beach, Ocean Beach, and Fort Funston. Under alternative B, off-leash dog walking would not be allowed at these sites. It is possible that some visitors who currently walk their dogs off leash at these sites would continue to use these same sites for dog walking, but would leash their dogs. However, it is more likely that visitors would take their dogs to nearby off-leash dog areas. The following paragraphs describe impacts to these nearby dog-walking areas as a result of changes proposed under this final plan/EIS for alternative B. The GGNRA sites are discussed below in order of geographic location (north to south) and only when redistribution is anticipated.

In Marin County, at Alta Trail/Orchard Fire Road/Pacheco Fire Road and Oakwood Valley, only on-leash dog walking would be allowed under alternative B. At Alta Trail and Oakwood Valley, off-leash dog walking would no longer be allowed. Commercial dog walkers that use Alta Trail in particular may move to other lands in Marin County. Additionally, no dogs would be allowed at Marin Headlands under this alternative. As a result of alternative B, it is anticipated that visitors at these sites would go to Camino Alto Open Space Preserve and Blithedale Summit Open Space Preserve for off-leash dog walking. These preserves allow on-leash dog walking on trails, and off-leash on fire roads in Marin County. Both of these areas offer extensive trail and road systems, but overcrowding could occur, depending upon day and use time. At Camino Alto, vegetation communities along fire roads include grasslands, bay and oak woodlands, and redwood and Douglas fir forests. Blithedale Summit contains chaparral and forested habitat, including redwood groves. Adverse impacts on the natural resources at these sites would occur from physical deterioration due to this increased use by dog walkers. The mature, forested vegetation such as the redwoods would be less susceptible to trampling compared to the grassy areas and sensitive special-status plant species. There is also a concern that visitors may go to into Mill Valley since it has many municipally maintained open-space reserves, parks, and coastal habitats that are open to the public including several nature trails. Dogs are required to be on leash in all but one of the parks in Mill Valley. Similar to the discussion at GGNRA lands, dogs could affect vegetation and soils at these sites by trampling and digging. Also, when visitors fail to comply with pet excrement removal requirements, dog waste can accumulate in the soils and affect the vegetation. At Blithedale Summit, the redwood groves provide habitat for the endangered northern spotted owl and other wildlife species. Similar to impacts stated at GGNRA, impacts to the owl would be unlikely since dogs are required to be on leash at this park. On-leash dog walking restrictions physically restrain dogs, reducing direct impacts on wildlife and wildlife habitat, and should eliminate potential chasing after wildlife. The movement of visitors to these sites for off-leash dog walking would result in overcrowding and would have a negative effect on visitor experience at these sites. Potential impacts to resources at these sites include impacts to native vegetation and endangered species habitats as stated above.

Since there would be no VSCA at Muir Beach under alternative B, it is possible that visitors from Muir Beach would go to Camino Alto Open Space Preserve (8.5 miles) or Blithedale Summit Open Space Preserve (7.3 driving miles). Similarly, visitors from Rodeo Beach may go to Camino Alto Open Space Preserve (10.6 driving miles) or Blithedale Summit Open Space Preserve (11.3 driving miles) to walk dogs off leash, thus adding to the previously described adverse impacts on the natural resources and visitor experience at these nearby dog walking areas.

Crissy Field dog walkers who want an off-leash experience would likely relocate to Alta Plaza Park (1.8 driving miles away), Golden Gate Park (5.8 driving miles away), or Mountain Lake Park (3.1 driving miles away). These sites have DPAs that would be impacted by increased visitation, affecting the visitor experience and causing natural resource degradation. Alta Plaza Park has large grassy areas within the 0.5 acre DPA. The 8.6 acres of DPAs at Golden Gate Park encompass forested habitat (including a DPA within a natural area that contains oak woodland) and lawn areas. Mountain Lake Park contains wetland areas and wildlife habitat, but the 0.4 acre DPA at this site is in an area of lawn and woodchips. Increased visitation from off-leash dog walking in the DPAs noted above would likely adversely impact natural resources. The grassy areas at Alta Plaza Park, Mountain Lake Park, and Golden Gate Park could be trampled due to overcrowding. These areas would become trampled and could become muddy in the winter rainy season, which may cause erosion during rain events. The more mature forested vegetation at Golden Gate Park would be less susceptible to trampling compared to the grassy areas, and monitoring of the oak woodlands would occur, as noted above (SFPD 2011, 114). Because there are no parking lots at Golden Gate and Mountain Lake Parks, finding street parking could negatively affect visitor experience, depending upon day and use times. Based on the public comments on the draft plan/EIS, visitors expressed concern with the impacts of visitors from Crissy Field going to nearby dog walking areas, such as Golden Gate Park, Alta Plaza Park, and Mountain Lake Park. Commenters noted that these nearby

areas would be overcrowded, and are not viable alternatives to Crissy Field (NPS 2011a, Correspondences 4602, 1642).

Under alternative B, restrictions on off-leash dog walking could result in not only the impacts discussed at the parks above, but adverse impacts on the Presidio Area B, lands managed by the Presidio Trust that are adjacent to Crissy Field. The Presidio Trust only allows on-leash dog walking in Area B; no off-leash dog walking is allowed. The Presidio Trust has collected data regarding Area B trail use by dog walkers. This section describes plant communities and listed wildlife along high-use and moderate-use dog walking areas of the Presidio (Area B) that may be affected by redistribution under alternative B. Similar to GGNRA sites, since dog walkers may walk along the edge of roads or trails in the Presidio (Area B), dogs would then have access to the adjacent land in all directions, resulting in a limit of disturbance (LOD) area for vegetation and soils that would extend out from the edges of the road or trails. The following trails in Area B have a high percentage of use by dog walkers (the percentage of visitors walking dogs is greater than 30 percent): Mountain Lake Trail (Arguello Blvd. to Mountain Lake), Ecology Trail (near the South Hills housing), West Pacific Trail (Broadway Gate to Arguello Gate), the Lombard Gate Lawn, and the Bay Area Ridge Trail (Spire to Rob Hill Campground). The high-use portions of both the Mountain Lake Trail and the West Pacific Trail (with the exception of the trail around the lake) are located along developed roadways (West Pacific Avenue) and therefore support very few native plant communities. The trail around Mountain Lake supports wetlands, including an arroyo willow riparian forest, classified as an ecological forest stand of high value. The federally threatened California red-legged frog has been mapped at Mountain Lake Park in the lake area. The Lombard Gate Lawn supports grassy areas but does not contain any sensitive resources or native plant communities. Portion of the Bay Area Ridge Trail either bisect or are adjacent to ecological forest stands of high value and rare plants, including the San Francisco lessingia (federally endangered) recovery zones in the dune scrub native plant community.

Trails at the Presidio that have a moderate percentage of use by dog walkers (visitors walking dogs is between 10 and 30 percent) include El Polín Spring (near East housing), Park Trail (bisects the site from the Public Health Service District to Cavalry Stables), Fort Scott Ball Field and Parade Ground (in the northwestern portion of the site), Lobos Valley Connector and South Baker Beach Apartments Social Trails (Wedemeyer St. to Lincoln Blvd.), and the Public Health Service District/Hospital Cemetery (in the southwestern portion of the site). The trail near El Polín Spring supports perennial and seasonal wetlands as well as rare plants and forest stands of high ecological value. In the vicinity of this area, a native serpentine prairie plant community also exists. The Park Trail bisects forest stands of high ecological value (including live oak woodlands) and is located adjacent to communities of rare plants and native dune scrub communities. The Fort Scott Ball Field and Parade Ground contains no native plant communities, but is mapped as a propagule collection area by the Presidio Trust. A propagule is a vegetative structure that can become detached from a plant and give rise to a new plant, such as a seed. The Presidio of San Francisco Native Plant Nursery produces native plants from locally collected propagules for habitat restoration projects. Therefore, this area is important in the long-term success of local restoration projects. The Lobos Valley Connector and South Baker Beach Apartments Social Trails are located just north of a waterbody named Lobos Creek. The majority of these trails are located within the native dune scrub plant community and supports rare plants, including the San Francisco lessingia (federally endangered) recovery zones, as well as ecological forest stands of high value. The Public Health Service District/Hospital Cemetery is located within a native dune scrub plant community that supports rare plants, including the San Francisco lessingia (federally endangered) recovery zones as well as a small stand of live oaks. A portion of this area is mapped as a propagule collection area by the Presidio Trust.

Adverse impacts on the plant communities (and soils) along trails that are both highly and moderately used by dog walkers would occur from physical deterioration such as trampling in adjacent areas of trails/roads due an increase in use by dog walkers. When dogs are on a leash (as required throughout Area

B), it is unlikely that digging or bed-making would occur due to proximity to the owner and the physical restriction of the leash. The mature, forested vegetation such as the live oaks and willows would be less susceptible to trampling compared to the grassy areas and sensitive special-status plant species (such as San Francisco lessingia) in the dune scrub plant communities. The recovery strategy for San Francisco lessingia is based on not only protecting and expanding the existing populations but also the "active reintroduction and expansion of San Francisco lessingia in unoccupied, restored or enhanced habitat within its historic range" (USFWS 2003, 51). The Presidio (Area B) supports habitat for the San Francisco lessingia, including a small portion of the recovery zones that are located within on-leash dog walking areas (Public Health Service District, Bay Area Ridge Trail, and Lobos Valley). An increase in dog walkers within these recovery zones of Area B may reduce the potential for reintroductions of the San Francisco lessingia, but the extent of these impacts is relatively unknown. Another special-status species, the federally threatened California red-legged frog, has been mapped at Mountain Lake. However, impacts to the frog at this park would be unlikely since dogs are required on leash at this park and dogs are not allowed in the lake. The grassy areas at sites such as the Lombard Gate Lawn as well as the Fort Scott Ball Field and Parade Ground could be subjected to trampling as a result of overcrowding. These areas would become muddy in the winter rainy season which may cause erosion during rain events. Also, when visitors fail to comply with pet excrement removal requirements, dog waste can accumulate in the soils and affect the vegetation. This could occur throughout the Presidio (Area B). The on-leash dog walking restrictions that are in place at the Presidio (Area B) would physically restrain dogs, reducing direct impacts on wildlife and wildlife habitat, and should also eliminate any potential chasing after wildlife. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. If dogs are physically restrained on leash, wildlife would be protected and it would reduce chasing after birds, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence and by lunging/barking at birds. This could especially occur along the trail at Mountain Lake, where shorebirds such as terns, kingfishers, ducks, and gulls could be affected as well as neotropical migrants such as songbirds, swallows, and flycatchers (Presidio Trust 2002, Figure 22). It is possible that birds in the wooded portions of Area B such as hawks, vultures, flycatchers, owls, swallows, songbirds, and woodpeckers may be affected by on-leash dogs, but the availability of tree cover and the leash requirement should reduce these impacts. The open portions (scrub and lawn areas) of Area B support flycatchers, songbirds, quails, and swallows (Presidio Trust 2002, Figure 22), which may also be affected by dogs, but the leash requirements should not allow dogs to chase or capture ground-dwelling birds in these habitats.

In a May 25, 2011 letter, the Presidio Trust expressed concerns that a reduction in off-leash areas under the draft plan/EIS may increase [illegal] off-leash activity in the Presidio Area B, even though off-leash dog walking is not allowed in Area B. The Presidio Trust was concerned that dog walkers from GGNRA may seek off-leash dog walking in more secluded areas within the Presidio to avoid overcrowding and to be less visible to law enforcement staff. If this occurs, it is possible that an increase in Presidio park operations may be required to enforce compliance with the on-leash requirements, thus negatively affecting the Presidio's annual budget.

Visitors to Crissy Field, including commercial dog walkers, may take dogs to the Presidio Area B due to the restrictions on the number of dogs (maximum of three for all dog walkers, including commercial dog walkers) at Crissy Field under alternative B. This impact from commercial dog walkers could change when new and/or proposed rules are implemented. In 2012, the San Francisco Board of Supervisors passed an ordinance that, starting in July 2013, will require commercial dog walkers to obtain a permit to walk four or more dogs, with a limit of eight, on City of San Francisco park and port property. The Presidio Trust issued a final rule on their interim program in August 2014 that would require all commercial dog walkers on Trust-managed land (Area B of the Presidio) to possess a valid commercial

dog-walking permit issued by the NPS and to comply with the terms and conditions of the NPS permit as well as those rules and regulations otherwise applicable to Area B. Commercial dog walkers would be allowed a maximum of six dogs at any one time. Under alternative B, GGNRA would allow all dog walkers, commercial and private, to walk up to three dogs without a permit in all park areas open to dog walking, including Crissy Field, Fort Point and Baker Beach – all adjacent to Area B of the Presidio. Under the regulation for commercial dog walking issued by the Presidio Trust, dog walkers in Area B of the Presidio would be limited to six dogs. Because the number of dogs allowed under the proposed restriction on commercial dog walkers on lands managed by the Presidio Trust is higher than the proposed limit of three dogs at Crissy Field in alternative B, commercial dog walkers with more than three dogs may go to Area B. An increase in commercial dog walkers with more than three dogs at Area B could result in adverse impacts to vegetation, water quality, special-status species, soils, and visitor experience at this site.

Similar to the impacts discussed above, non-commercial dog walkers may also go the Presidio Area B in order to walk more than three dogs. Visitors from other nearby GGNRA sites that want to walk more than three dogs may also go to the Presidio Area B, particularly visitors from the sites adjacent to Area B - Crissy Field, Fort Point, and Baker Beach. An increase in visitation at the Presidio Area B could result in adverse impacts to vegetation, water quality, special-status species, soils, visitor experience, and park operations at this site.

Because there would not be a VSCA at Baker Beach under alternative B, visitors wanting to walk their dogs off leash are likely to go to Golden Gate Park (2.2 driving miles to 8.6 acre DPA) and Mountain Lake Park (1.4 driving miles to 0.4 acre), thus further exacerbating impacts on the natural resources and visitor experience at these nearby dog walking areas as described above for Crissy Field. Similar to the impacts discussed above, visitors to Baker Beach may also go to the Presidio Area B in order to walk more than three dogs, the limit for dog walkers at GGNRA sites under alternative B. An increase in visitation at the Presidio Area B would result in impacts to natural resources at the site as previously described.

Dog walking would not be allowed at Fort Miley under alternative B (alternative A allows off-leash dog walking), so it is likely that visitors would take their dogs to adjacent or nearby GGNRA sites, or possibly to nearby off-leash dog walking areas like Alta Plaza Park (0.5 acre DPA), Glen Canyon, and Mountain Lake Park (0.4 acre DPA). As a result of this redistribution, adverse impacts may occur to natural resources at nearby dog walking sites. Resource impacts as a result of overcrowding and increased dog walking include impacts to wetlands, native vegetation communities, and riparian habitat. On- and off-leash dog walking is available at these nearby dog walking sites, but only on-leash dog walking is allowed in areas with sensitive resources, reducing the potential impacts to these resources.

Visitors who prefer to walk their dogs off-leash at Ocean Beach would be likely relocate to Pine Lake/Stern Grove (3.9 driving miles away) under alternative B. This would further exacerbate impacts on the natural resources and visitor experience described at these nearby dog walking areas, particularly due to the high number of visitors that currently use Ocean Beach. The meadow plant community within the 4.0 acre DPA at Pine Lake/Stern Grove may be adversely affected through trampling and dog waste due to increased use. However, as stated in the SNRAMP, the SFRPD would monitor dog use and impacts on the wildflower meadows in McLaren Park (SFPD 2011, 114), which should limit the extent of impacts to this plant community. Other communities that may be negatively affected by increased dog use at Pine Lake/Stern Grove include wetlands such as open water, willow scrub, and freshwater marshes. Plant communities such as riparian habitats would be less affected by dog use compared to wetlands due to the mature nature of trees associated with this habitat. Wildlife that use the open water and wetland habitats would be affected by increased dog use. This wildlife includes mobile wildlife species, particularly birds that forage, nest, and roost in the habitats at Pine Lake/Stern Grove. Because of mobility, wildlife can

usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high-quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. In addition, because Pine Lake/Stern Grove has off-leash areas available for dogs, the lack of physical restraint (leash) may allow dogs to chase and/or capture small mammals or ground-dwelling birds. At Pine Lake/Stern Grove, there is a parking lot along the road and a lot at the park. Visitor experience would be negatively affected under alternative B if street parking cannot be found or if the parking lot is full due to the increase in dog walkers that would be redistributed to this area. As stated in public comments to the draft plan/EIS, "If use by off-leash voice-controlled dogs is drastically restricted at Ocean Beach, the DPA at Stern Grove, an area we utilize, will be very adversely impacted. Such an event happened recently when the tsunami warning closed Ocean Beach for several days. The use of the dog off-leash area at Stern Grove more than quadrupled during that time" (NPS 2011a, Correspondence 4556). It is expected that the movement of visitors to other dog parks as a result of alternative B would not have the same level of impact on nearby dog walking areas as the tsunami, since these sites would not be completely closed, but open to on-leash dog walking. However, because alternative B would not allow VSCAs at any of the GGNRA sites, overcrowding at Pine Lake/Stern Grove and issues with parking would be expected. Additionally, visitors may go to one of the four DPAs in Golden Gate Park (2.5 driving miles to 8.6 acre DPAs). Those DPAs may be impacted by the increased visitation in a number of ways. There are no parking lots; visitors would need to find street parking. The DPAs at Golden Gate Park encompass forested habitat as well as lawn areas. One of the DPAs at Golden Gate Park is within a natural area that contains oak woodland habitat; increased off-leash dog walking would be likely to have an adverse effect on natural resources at all of the Golden Gate DPAs. At Golden Gate Park, the grassy areas at this site could be trampled due to overcrowding, but the DPAs found in areas with more mature forested vegetation would be less susceptible to this trampling. Additionally, the SFRPD would monitor dog use and impacts on the oak woodland habitat that includes a DPA at Golden Gate Park (SFPD 2011, 114).

Under alternative B, dog walkers who currently visit Fort Funston would likely take their dogs to the 4.0 acre DPA at Pine Lake/Stern Grove (3.3 driving miles away), 59.9 acre DPA at McLaren Park (6.4 driving miles away), or 21 acre DPA at Bernal Heights (7.9 driving miles away) for an off-leash experience. These nearby sites would likely be the most impacted from the movement of visitors in terms of increased visitation and natural resource degradation. Specific impacts to Pine Lake/Stern Grove have been described above for Ocean Beach. Plant communities present at McLaren Park that could be adversely affected by increased dog use at the park include freshwater sources, including Gray Fox Creek, wet meadows, and a freshwater marsh, as well as associated riparian habitats (willow scrub) and wildflower meadows (SFPD 2011, 114: 214). The DPA at McLaren Park is a 59.9-acre hill top park within a natural area, and may become overcrowded, thus affecting open lawn areas and the nearby reservoir (although dogs are not allowed in the waterbody). The other DPA at McLaren Park may be adversely affected as well as the open lawn areas within the DPA. The lawn areas at these two DPAs could be trampled and may ultimately become muddy in the winter rainy season, which may cause erosion during rain events. The steep slopes at the hill-top park DPA may be particularly affected by erosion and runoff. Based on public comments on the draft plan/EIS, visitors may take their dogs to Bernal Hill if off-leash dog walking is reduced at Fort Funston (NPS 2011a, Correspondence 4575). The plant communities within the 21 acre DPA at Bernal Hill that may be affected by increased dog use include grassy areas, scattered trees, and scrub vegetation (SFPD 2011, 117). The network of social trails that traverses the hill area would have increased use, thus further exacerbating impacts to the plant communities adjacent to the trails. Additionally, native grasslands and sensitive plant species may also be affected, although it is less likely that the urban forest at the site would be affected due to the established nature of mature trees. As a result of increased dog use at these parks under alternative B, adverse impacts would occur from physical deterioration of natural resources at Pine Lake/Stern Grove, McLaren Park, and most likely at Bernal Hill. Bernal Hill and Pine Lake are both designated as natural areas by SFRPD; Pine Lake has undergone native plant restoration. These natural areas and the restoration areas may be

negatively affected under alternative B of the draft plan/SEIS. At the three sites discussed above, the existing habitats are accessible to mobile wildlife species, particularly birds that forage, nest, and roost in these habitats, which may be negatively affected by increased dog use of the sites. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. In addition, because McLaren Park, Bernal Hill, and Pine Lake/Stern Grove have off-leash areas available for dogs, the lack of physical restraint (leash) may allow dogs to chase and/or capture small mammals or ground-dwelling birds. At McLaren Park, there is parking along Shelley Drive and a parking lot located near the reservoir; there are parking spaces at Bernal Hill, and at Pine Lake/Stern Grove there is a parking lot at Crestlake and Vale streets next to the DPA. Therefore, visitor experience would be negatively affected under alternative B if street parking cannot be found or if the parking lots are full due to the increase in dog walkers that would be redistributed to these sites. The SNRAMP proposes to reduce the size of the DPA at both McLaren Park and Bernal Hill; the SNRAMP does not propose to reduce the size of the DPAs at Pine Lake/Stern Grove (SFPD 2011, 114). The McLaren Park DPA will be reduced from 61.7 acres to 59.9 acres (a reduction of 8.3 acres, approximately 13 percent of total DPA area), and the Bernal Hill DPA will be reduced from 21 acres to 15 acres (a reduction of 6 acres, approximately 29 percent of total DPA area) (SFPD 2011, 114). These reductions would further crowd dogs and dog walkers into a reduced space and would result in a reduced visitor experience. In addition, commercial dog walking is considered high use at Fort Funston. Under alternative B, GGNRA would allow all dog walkers, commercial and private, to walk up to three dogs without a permit at Fort Funston. Under alternative B, no permits would be issued allowing dog walkers to have more than three dogs. This may result in an increase in commercial dog walkers with more than three dogs at the sites listed above, which could further exacerbate impacts on the natural resources and visitor experience at these nearby dog walking areas.

Under alternative B, impacts to nearby dog walking areas in San Mateo County may occur from a reduction in dog walking trails at Mori Point, Milagra Ridge, and Rancho Corral de Tierra; dogs would be prohibited at Sweeney Ridge/Cattle Hill. As a result of these changes, some visitors may walk their dogs on-leash at Pacifica State Beach, Montara State Beach (including McNee Ranch), Devil's Slide Trail, Pillar Point Bluff, and at Sharp Park. Natural resources that may be affected by an increase in dog walking at Pacifica Beach include a wetland that provides wildlife habitat and the beach, which is home to large numbers of shorebirds, including the federally threatened western snowy plover. This beach is listed as habitat for the western snowy plover in the U.S. Fish and Wildlife Service (USFWS) recovery plan (Pacific Shorebird Alliance 2012, 1). Although off-leash dog walking is not allowed at this site, even leashed dogs on the beach could bark and/or lunge at feeding and roosting shorebirds and western snowy plovers, resulting in disturbance and/or harassment. The reproductive success of individuals of the species would not likely be affected, but the use of preferred habitat by the western snowy plover may be limited. Natural resources that may be affected by an increase in dog walking at Montara State Beach (including McNee Ranch) include a beach where seals occasionally haul out, tidepools, as well as undisturbed coastal mountain habitat. At this site, on-leash dog walking would restrain or prevent access to stranded marine mammals and marine mammals that haul out. However, even leashed dogs may disturb and cause additional stress to marine mammals as well as shorebirds that use the beach, as described above for the plover. Sweeney Ridge, Mori Point, and Milagra Ridge all border the edge of Sharp Park. Therefore, redistribution at this nearby dog walking area would be expected due to its close proximity to these GGNRA sites, even though this park was identified as an alternative site for on-leash dog walking at a very low frequency (NPS 2012a, Attachment B). On-leash dog walking is allowed at Sharp Park; there are no off-leash dog areas or DPAs within this park. Sharp Park supports numerous habits, such as wetlands and scrub vegetation and invasive forests and maintained lawns associated with a golf course. The federally endangered San Francisco garter snake and the threatened California red-legged frog both potentially occur at Sharp Park (SFRPD 2011, 37). However, the physical restraint of dogs on leash within the entire site, as well as the proposed signs and barriers at sensitive habitat should protect

wetlands, waterways, the frog, and the snake at areas such as the Horse Stable Pond and Laguna Salada. Because Sharp Park is bordered by undeveloped GGNRA sites, it serves as a relatively undisturbed corridor for wildlife, particularly birds (SFPD 2011, 290). Sensitive avian species that use wetland habitats at Sharp Park, such as common yellowthroats and black-crowned night herons, should be protected by the leash requirement, even through leashed dogs can affect wildlife as previously discussed in this chapter. In addition, mammals that are known to use Sharp Park including black-tailed deer, bobcat, common porcupine, coyote, and mountain lion would also be protected by the leash requirement. Additionally, when dogs scent mark with urine, this could either attract wildlife or cause avoidance of an area by wildlife. Finally, an increase in visitation at Pacifica State Beach, Montara State Beach (including McNee Ranch), Devil's Slide Trail, Pillar Point Bluff, and Sharp Park may result in overcrowding that would reduce the overall visitor experience and cause adverse impacts to natural resources as described above.

Overall, alternative B is anticipated to have long-term, moderate adverse impacts on nearby dog walking areas as a result of this final plan/EIS. Under alternative B, on-leash dog walking is reduced, no VSCAs are proposed, and three GGNRA sites (Marin Headlands, Fort Miley, and Sweeney Ridge/Cattle Hill) would completely prohibit dogs. Compared to alternative A, alternative B would reduce the available on-leash dog walking on trails/roads/beaches by approximately 3.37 miles and in other areas by 14.03 acres; off-leash dog walking would not be available under alternative B, reducing off-leash trails/roads/beaches by approximately 33.21 miles and other areas by 139.78 acres. Visitors who currently use GGNRA sites for off-leash dog walking would likely find other places to walk their dogs off-leash in nearby areas. The movement of these visitors, particularly from those sites that are heavily used for off-leash dog walking, would result in overcrowding at nearby parks, and would cause the physical deterioration of natural resources at these sites. These impacts would likely be most concentrated within the DPAs, which make up between 1 percent and 62 percent of each of the total park sites, as shown in table 33. The mileage of off-leash dog walking on fire roads at sites in Marin County was not readily available, and is therefore not listed in table 33.

TABLE 33. DOG PLAY AREAS IN NEARBY DOG WALKING AREAS

Nearby Dog Walking Area	Total Size of Park (acres)	Size of DPA (acres)	DPA % of Total Area
Alta Plaza Park	11.9	0.5	4
Pine Lake/Stern Grove	64	4	6
McLaren Park	312	61.7 (to be reduced to 53.4)	19
Bernal Heights	24.3	21 (to be reduced to 15)	62
Mountain Lake Park	14	0.4	3
Golden Gate Park	1,017	8.6	1

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C provides a variety of different dog walking opportunities in all three counties. Of the sites that currently have high levels of dog walking, Rodeo Beach, Crissy Field, Ocean Beach, and Fort Funston would still have VSCAs available under alternative C, but there would be a decrease in the size of these areas compared to alternative A. It is likely that many visitors would continue to walk their dogs off-leash at these areas, but some visitors may choose to visit sites with larger, off-leash areas. Under alternative C, there would be no off-leash walking at Muir Beach and Baker Beach. It is possible that some visitors who currently walk their dogs off-leash at these sites would continue to use these same sites for dog walking, but would leash their dogs. However, it is more likely that visitors would take their dogs to nearby off-leash dog areas. The following

paragraphs describe impacts to these nearby dog walking areas as a result of changes proposed under this final plan/EIS for alternative C. The GGNRA sites are discussed below in order of geographic location (north to south) and only when redistribution is anticipated.

Because there would not be a VSCA at Muir Beach under alternative C, it is possible that dog walkers would go to Camino Alto Open Space Preserve (8.5 miles) or Blithedale Summit Open Space Preserve (7.3 driving miles) for an off-leash (although non-beach) experience in a large area, or Rodeo Beach for an off-leash beach experience. Impacts from increased visitation would be similar to those discussed for alternative B under Muir Beach. Dog walkers using Rodeo Beach are likely to continue to use Rodeo Beach for off-leash and on-leash dog walking, since the VSCA under this alternative includes the entire main beach.

Under alternative C, dogs would not be allowed off-leash at Marin Headlands or Alta Trail/Orchard Fire Road/Pacheco Fire Road. Commercial dog walkers that use Alta Trail in particular, may move to other lands in Marin County. Impacts to nearby dog walking areas (Camino Alto Open Space Preserve, Blithedale Summit Open Space Preserve, and parks in Mill Valley) are anticipated to be similar to those discussed under alternative B, though impacts may be lessened because dog walkers at Oakwood Valley are not expected to go to nearby dog walking sites as off-leash dog walking would still be allowed.

For Crissy Field, it is most likely that visitors would continue to use the site for off-leash dog walking, despite the decrease in area available for off-leash dog walking (VSCAs). However, some visitors may choose to go to other sites for off-leash dog walking. Dog walkers from Crissy Field preferring off-leash dog walking would most likely relocate to Alta Plaza Park (1.8 driving miles away to 0.5 acre DPA), Golden Gate Park (5.8 driving miles away to 8.6 acre DPA), and Mountain Lake Park (3.1 driving miles away to 0.4 acre DPA). Impacts to these sites are listed above under alternative B, but impacts are anticipated to be reduced under alternative C, since fewer visitors would come to these sites from Crissy Field. Under alternative C, visitors would be allowed to walk up to three dogs without a permit, but could apply for a permit to walk up to six dogs at several sites, including Crissy Field. As discussed for alternative B, restrictions on off-leash dog walking could result in adverse impacts on the Presidio Area B, lands managed by the Presidio Trust. An increase in commercial dog walkers at Area B could result in adverse impacts to vegetation, soils, wildlife, special-status species, visitor experience, and park operations at this site. Impacts would be similar to those described in detail for alternative B, although impacts would be reduced since off-leash dog walking would be allowed under alternative C. As stated in alternative B, the Presidio Trust expressed concerns that a reduction in off-leash areas under the plan/EIS may increase [illegal] off-leash activity in the Presidio Area B, even though off-leash dog walking is not allowed in Area B (May 25, 2011 letter). The Presidio Trust was concerned that dog walkers from GGNRA may seek off-leash dog walking in more secluded areas within the Presidio to avoid overcrowding and to be less visible to law enforcement staff. If this occurs, it is possible that an increase in Presidio park operations may be required to enforce compliance with the on-leash requirements, thus negatively affecting the Presidio's annual budget.

For Baker Beach, where off leash dog walking would not be allowed under alternative C, dog walkers who want an off-leash experience would likely relocate to Mountain Lake Park (1.4 driving miles) or Golden Gate Park (2.2 driving miles). These sites have DPAs that would be impacted from the movement of visitors in terms of increased visitation and natural resource degradation, as mentioned under alternative B. Increased visitation from off-leash dog walking in the these DPAs would likely adversely impact natural resources.

At Fort Miley, off-leash dog walking would be restricted to on leash in one trail corridor under alternative C. It is anticipated that some visitors, particularly those who prefer to walk their dogs off leash, may go to nearby dog walking areas that provide an off-leash dog walking experience, including Alta Plaza Park

(0.5 acre DPA), Golden Gate Park (8.6 acre DPA), Glen Canyon, and Mountain Lake Park (0.4 acre DPA). Resource impacts as a result of overcrowding and increased dog walking, include impacts such as trampling, digging, and dog waste in the native vegetation communities and riparian habitat at the DPAs listed above. Both on-leash and off-leash dog walking is available at these nearby dog walking sites, but only on-leash dog walking is allowed in areas with sensitive resources, reducing the potential impacts to these resources. Impacts to resources would be similar to those described in detail by area under alternative B. Visitors preferring to walk their dogs on leash may not relocate to nearby dog walking areas under alternative C because Fort Miley would allow some on-leash dog walking under this alternative, thus reducing the potential adverse impacts.

Under alternative C, some visitors who walk their dogs off leash at Ocean Beach may go to Pine Lake/Stern Grove (3.9 driving miles away to 4.0 acre DPA). However, it is expected that most visitors would continue to use Ocean Beach for off-leash dog walking under alternative C, since it is likely that they prefer a beach experience. If visitors move to Pine Lake/Stern Grove, it would further exacerbate impacts on the natural resources and visitor experience. Visitors from Ocean Beach may go to one of the four DPAs totaling 8.6 acres at Golden Gate Park (2.5 driving miles away) for an off-leash experience. The impacts resulting from increased visitation at Golden Gate Park would be similar to the impacts described under alternative B, but these impacts would be reduced under alternative C, since fewer visitors would go to these sites from Ocean Beach. At Golden Gate Park, there are no parking lots, so visitors would need to find street parking. The DPAs at Golden Gate Park encompass forested habitat and lawn areas. One of the DPAs at Golden Gate Park is within a natural area that contains oak woodland habitat; increased off-leash dog walking would be likely to have an adverse effect on natural resources at all of the Golden Gate DPAs. At Golden Gate Park, the grassy areas could be trampled due to overcrowding, but the DPAs in areas with more mature forested vegetation would be less susceptible to trampling.

Visitors who currently visit Fort Funston would likely continue to take their dogs to Fort Funston for off-leash dog walking, despite the decrease in the size of the area open to off-leash dog walking (VSCA). However, some visitors may choose to visit nearby dog walking sites for off-leash dog walking under alternative C. Those visitors would likely go to the DPAs at Pine Lake/Stern Grove (4.0 acres), McLaren Park (61.7 acres), or Bernal Heights (21.0 acres) for an off-leash experience in a large area, even though these sites would not offer a beach experience. Impacts at these sites would be the same as those listed under alternative B, but would be reduced under alternative C, since fewer visitors from Fort Funston are anticipated to go to these sites and there would be less overcrowding. However, commercial dog walking is considered a high use at Fort Funston. Under alternative C, commercial dog walkers with a permit are limited to six dogs. This limit would result in an increase in commercial dog walkers at the sites listed above where commercial dog walkers would be allowed to have up to eight dogs. That additional relocation could further exacerbate impacts on the natural resources and visitor experience at these nearby dog walking areas.

Overall, alternative C is anticipated to have long-term, minor to moderate adverse impacts on nearby dog walking areas as a result of this final plan/EIS. Impacts to these areas under alternative C are expected to be reduced compared to alternative B, since on-leash and off-leash dog walking would still be available at GGNRA sites, but reduced in total mileage/acreage. Only a very small number of sites would be closed to dogs under alternative C, and this alternative establishes VSCAs at several sites. Compared to alternative A, alternative C would reduce the available on-leash dog walking on trails/roads/beaches by approximately 1.76 miles and in other areas by approximately 40.81 acres; off-leash dog walking would be reduced on trails/roads/beaches by approximately 30.1 miles and in other areas by approximately 110.66 acres. Visitors who currently use GGNRA sites for off-leash dog walking would most likely continue to walk their dogs at GGNRA sites that with VSCAs for off-leash dog walking. However, some visitors may find other places to walk their dogs off-leash in nearby areas. The movement of these

visitors, particularly from those sites that are most heavily used for recreation but no longer allow for off-leash dog walking, would result in overcrowding at nearby parks. This would likely cause physical deterioration of natural resources at these sites and would have impacts to the visitor experience. These impacts would likely be most concentrated within the DPAs.

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D is the alternative that is most protective of resources and visitor safety. Of the sites that currently have high levels of dog walking, Crissy Field and Fort Funston, would still have VSCAs under alternative D, but there would be a noticeable decrease in the size of these areas. It is likely that many visitors would continue to walk their dogs off leash at these areas, but some visitors may choose to visit sites with larger off-leash areas. Baker Beach, Rodeo Beach, Ocean Beach, and Muir Beach would no longer allow for off-leash dog walking under alternative D. It is possible that some visitors who currently walk their dogs off leash at these sites would continue to use these same sites for dog walking, but would leash their dogs. However, it is possible that visitors would take their dogs to nearby off-leash dog areas. The following paragraphs describe impacts to these nearby dog walking areas as a result of changes proposed under this final plan/EIS for alternative D. The GGNRA sites are discussed below in order of geographic location (north to south) and only when redistribution is anticipated.

Under alternative D, off-leash dog walking would be prohibited at Oakwood Valley, and no dogs would be permitted at Marin Headlands, Alta Trail, Orchard Fire Road, or Pacheco Fire Road. Commercial dog walkers that use Alta Trail in particular would likely move to other lands in Marin County. Impacts to nearby dog walking areas (Camino Alto Open Space Preserve, Blithedale Summit Open Space Preserve, and parks in Mill Valley) are anticipated to be similar to those under alternative B. However the sites may experience higher visitation under alternative D because the Marin Headlands and Alta Trail sites would not allow dogs. This may slightly increase adverse impacts at nearby dog walking areas described under alternative B.

Because there would not be a VSCA at Muir Beach under alternative D, it is possible that visitors would go to Camino Alto Open Space Preserve (8.5 miles) or Blithedale Summit Open Space Preserve (7.3 driving miles). Similarly, Rodeo Beach would not have a VSCA and visitors would likely go to Camino Alto Open Space Preserve (10.6 driving miles) or Blithedale Summit Open Space Preserve (11.3 driving miles) to walk dogs off leash, which could result in overcrowding depending upon day and use time. An off-leash beach experience similar to Muir Beach and Rodeo Beach is not available in Marin County. The increased use predicted at Camino Alto and Blithedale Summit would likely result in adverse impacts to these sites from the physical deterioration of natural resources and visitor experience, as described for alternative B.

Under alternative D at Crissy Field, it is most likely that visitors would continue to use the site for off-leash dog walking, despite the noticeable decrease in off-leash dog walking areas (15.4 acres of VSCAs exist under alternative D at Crissy Field, which is a decrease of 23.2 acres compared to alternative A). However, some visitors may instead choose to go to other sites for off-leash dog walking. Visitors would most likely relocate to Alta Plaza Park (1.8 driving miles away to 0.5 acre DPA), Golden Gate Park (5.8 driving miles away to 8.6 acre DPA), and Mountain Lake Park (3.1 driving miles away to 0.4 acre DPA). Impacts to these sites are listed under alternative B would be elevated under alternative D, since additional dog walkers may relocate to these sites from Crissy Field. Similar to alternative B, visitors would be able to walk up to three dogs without a permit at Crissy Field under alternative D, but no commercial dog walking would be allowed. Visitors from Crissy Field who wish to walk more than three dogs may go to the Presidio Area B. Additionally, commercial dog walkers may take dogs to the Presidio Area B (a limit of six dogs). As a result of these changes, an increase in noncompliant off-leash dog walking at the Presidio Area B could occur, particularly in more secluded areas. An increase in commercial dog walkers at Area B could result in adverse impacts to vegetation, water quality, special-

status species, soils, and visitor experience at this site. Non-commercial dog walkers who wish to walk more than three dogs may go to the Presidio Area B, including visitors from other GGNRA sites adjacent to Presidio Area B such as Baker Beach, Crissy Field, and Fort Point.

At Baker Beach, visitors who want an off-leash experience would likely relocate to Mountain Lake Park (1.4 driving miles to a 0.4 acre DPA) and Golden Gate Park (2.2 driving miles to a 8.6 acre DPA). DPAs at these sites would be impacted from the movement of visitors in terms of increased visitation and natural resource degradation, as mentioned in alternative B. Increased visitation from off-leash dog walking in the DPA would be likely to adversely impact natural resources. Similar to the impacts discussed above, visitors may go the Presidio Area B in order to walk more than three dogs, the limit for dog walkers under alternative D. Visitors from other nearby GGNRA sites that want to walk more than three dogs may go to the Presidio Area B, including visitors from Crissy Field and Fort Point. An increase in visitation at the Presidio Area B would result in impacts to natural resources at the site.

Under alternative D, dog walking would no longer be allowed at Fort Miley, and it is likely that visitors would take their dogs to nearby GGNRA sites or to nearby dog walking areas outside of GGNRA, such as the DPAs at SFRPD sites, Golden Gate Park, Alta Plaza Park, Glen Canyon, and Mountain Lake Park. As a result of this redistribution, adverse impacts may occur to natural resources at nearby dog walking sites. Impacts would be similar to those described under alternative B.

Some visitors who prefer to walk their dogs off leash at Ocean Beach would likely go to the DPAs in Pine Lake/Stern Grove (3.9 driving miles to a 4.0 DPA) under alternative D. The DPAs at this site would be impacted from increased visitation and natural resource degradation, as mentioned in alternative B. Increased visitation from off-leash dog walking in the DPAs would likely adversely impact natural resources found at Pine Lake/Stern Grove. Visitors from Ocean Beach may go to DPAs in Golden Gate Park (2.5 driving miles to a 8.6 DPA). The impacts of overcrowding in the DPAs at this site are anticipated to be similar to the impacts discussed in alternative B. Under alternative D, some visitors would likely continue to take their dogs to Fort Funston for off-leash dog walking, but with the noticeable reduction of area open to dog walking under voice control at that site, other visitors may choose to visit nearby dog walking sites for off-leash dog walking. These visitors would likely go to the DPAs mentioned under alternative B: Pine Lake/Stern Grove, McLaren Park, or Bernal Heights. Impacts at these sites would be similar to those listed under alternative B, but would be somewhat reduced under alternative D, as fewer visitors from Fort Funston are anticipated to go to these sites because a VSCA would be available under alternative D. In addition, commercial dog walking is considered high use at Fort Funston. Under alternative D, no commercial dog walking would be allowed. This would result in an increase in commercial dog walkers at the sites mentioned above, which would further exacerbate impacts on the natural resources and visitor experience at these nearby dog walking areas.

In San Mateo County, alternative D would result in impacts to nearby dog walking areas. Under alternative D, dog walking would only be allowed at Rancho Corral de Tierra. Dogs would be prohibited at all other GGNRA sites in San Mateo County. Visitors that use these San Mateo sites (Mori Point, Milagra Ridge, and Sweeney Ridge and Cattle Hill) are anticipated to walk their dogs at Rancho Corral de Tierra or other nearby dog walking areas. Although visitation at most of these GGNRA sites is low, impacts may occur at the following sites: Pacifica State Beach, Montara State Park (including McNee Ranch), Sharp Park, Devil's Slide Trail, Pillar Point Bluff, and Half Moon Bay (Surfers Beach and the volunteer-run dog park in Half Moon Bay). An increase in visitation at these sites under alternative D may result in adverse impacts as a result of physical deterioration of natural resources as previously described with the exception of Half Moon Bay. Adverse impacts at Pacifica State Beach, Montara State Park (including McNee Ranch), and Sharp Park would be similar to impacts described under alternative B at these three sites. Natural resources that may be affected by an increase in dog walking at Half Moon Bay include beach habitat, which is home to large numbers of shorebirds, including the federally

threatened western snowy plover as well as western, California, and glaucous-winged gulls; brown pelicans; and sanderlings (California State Parks 2005, 4). Although off-leash dog walking is not allowed at this site, even leashed dogs on the beach could bark and/or lunge at feeding and roosting shorebirds and western snowy plovers, resulting in disturbance and/or harassment; the reproductive success of individuals of the species would not likely be affected, but the use of preferred habitat by the western snowy plover may be limited. The plant communities of Half Moon Bay Beach include many non-native plant species (California State Parks 2005, 4) that would not likely be affected by dogs on the beach due to the leash requirement. Many birds live or migrate near the Devil's Slide Trail such as pelicans, cormorants, and common murres; raptors, such as hawks, falcons, and turkey vultures; and songbirds, such as Benwick's Wren, Golden-crowned, and Song Sparrows (County of San Mateo 2016a, 1). The common murres who nest in the rocks below the trail became acclimated to passing traffic on Highway 1, but trail-users may frighten them so fencing and native vegetation have been placed on the trail to hide hikers and visitors from the view of nesting murres (County of San Mateo 2016a, 1). In addition, an increase in visitation at Half Moon Bay, Pacifica State Beach, Montara State Beach (including McNee Ranch), and Sharp Park may result in overcrowding that would reduce the overall visitor experience and cause adverse impacts to natural resources as described in alternative B.

Overall, alternative D is anticipated to have long-term, moderate to major adverse impacts on nearby dog walking areas as a result of this final plan/EIS. Under alternative D, on-leash dog walking is reduced, the number and size of VSCAs are reduced, and nine GGNRA sites (Stinson Beach, Alta Trail, Marin Headlands, Fort Miley, Sutro Heights, Mori Point, Milagra Ridge, and Sweeney Ridge/Cattle Hill) would completely prohibit dogs. Compared to alternative A, alternative D would reduce the available on-leash dog walking on trails/roads/beaches by approximately 20.09 miles and in other areas by approximately 62.72 acres; off-leash dog walking would be reduced on trails/roads/beaches by approximately 33.21 miles and in other areas by approximately 117.2 acres. Under alternative D, commercial dog walking would not be allowed, so these dog walkers would relocate to other nearby dog walking areas, including the City of San Francisco and the Presidio Area B. As a result, this alternative could have up to major, adverse impacts to nearby dog walking areas. Visitors and commercial dog walkers who currently use GGNRA sites for off-leash dog walking would most likely find other places to walk their dogs off-leash in nearby areas. The movement of private and commercial dog walkers, particularly from those GGNRA sites that are most heavily used for dog walking, would likely result in overcrowding at nearby parks, and would cause the physical deterioration of natural resources at these sites. Overcrowding would also have impacts on the visitor experience at these sites. These impacts would likely be most concentrated within the DPAs.

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E offers the most dog walking access to GGNRA areas, while still providing protection for natural and cultural resources, and recreational experiences for all user groups. The area available for walking dogs off-leash at Muir Beach would be reduced under alternative E. It is possible that some visitors who currently walk their dogs off leash at Muir Beach would continue to use this site for dog walking, but with the reduced area, it is also likely that some visitors would take their dogs to the nearby off-leash dog areas described in more detail in the paragraphs that follow. Of the sites that currently have high levels of dog walking, Rodeo Beach would have the same access as is currently available under alternative A. It is anticipated that there would be no change in dog walking visitation related to this site. Crissy Field, Fort Funston, Baker Beach, and Ocean Beach would all have VSCAs under alternative E, but there would be some decrease in size of these off-leash areas compared to alternative A. It is most likely that many visitors would continue to walk their dogs off leash at these areas, but some visitors may choose to visit sites with larger off-leash areas. The following paragraphs describe impacts to these nearby dog walking areas as a result of changes proposed under this final plan/EIS for alternative E. The GGNRA sites are discussed below in order of geographic location (north to south) and only when redistribution is anticipated.

Off-leash dog walking would not be permitted at Alta Trail, Orchard Fire Road, Pacheco Fire Road, or Marin Headlands Trails under alternative E, but the miles available for on-leash dog walking would increase. Commercial dog walkers that use Alta Trail in particular may move to other lands in Marin County. It is anticipated that visitors who want an off-leash dog walking experience would relocate to Camino Alto Open Space Preserve or Blithedale Summit Open Space Preserve and possibly Mill Valley for off-leash dog walking. Impacts to natural resources at these sites as a result of increased visitation and overcrowding are anticipated to be similar to the impacts described under alternative B.

Under alternative E, since the area available for off-leash dog walking at Muir Beach would be reduced, it is anticipated that visitors wishing to walk their dogs off leash would go to the larger off-leash areas Camino Alto Open Space Preserve (8.5 miles) and Blithedale Summit Open Space Preserve (7.3 driving miles). Impacts at these sites from increased visitation are expected to be the same as impacts discussed under alternative B.

It is most likely that visitors would continue to use Crissy Field for off-leash dog walking, despite the decrease in size of the area available for off-leash dog walking (VSCAs). However, some visitors may choose to go to other sites for off-leash dog walking. Visitors would most likely relocate to Alta Plaza Park (1.8 driving miles to a 0.5 acre DPA), Golden Gate Park (5.8 driving miles to a 8.6 acre DPA), and Mountain Lake Park (3.1 driving miles to a 0.4 acre DPA), although these areas do not provide a beach experience. Impacts to these sites are listed under alternative B, but impacts under alternative E are anticipated to be less adverse than under alternative B because fewer visitors would likely relocate to these sites from Crissy Field. Under alternative E, private and commercial dog walkers would be allowed to walk up to three dogs without a permit, but could apply for a permit to walk up to six dogs at seven park sites, including Crissy Field. As discussed under alternative B, restrictions on off-leash dog walking could result in adverse impacts on the Presidio Area B, lands managed by the Presidio Trust. Adverse impacts on the plant communities (and soils) within the Presidio Area B along trails that are both highly and moderately used by dog walkers would occur from physical deterioration such as trampling in adjacent areas of trails/roads due an increase in use by dog walkers. Also, when visitors fail to comply with pet excrement removal requirements, dog waste can accumulate in the soils and affect the vegetation. The mature, forested vegetation such as the live oaks and willows would be less susceptible to trampling compared to the grassy areas and sensitive special-status plant species in the dune scrub plant communities in Area B. An increase in dog walkers within the recovery zones for the San Francisco lessingia of Area B may reduce the potential for reintroduction of the San Francisco lessingia, but the extent of this impact is relatively unknown. Impacts to the federally threatened California red-legged frog would be unlikely since dogs are required on leash at this park and dogs are not allowed in the lake where the frog occurs. The grassy areas at sites such as the Lombard Gate Lawn and the Fort Scott Ball Field and Parade Ground could be subjected to trampling as a result of overcrowding. These areas would become muddy in the winter rainy season which may cause erosion during rain events. This could occur throughout the Presidio (Area B). The on-leash dog walking restrictions that are in place at the Presidio (Area B) would physically restrain dogs, reducing direct impacts on wildlife and wildlife habitat, and should also eliminate potential chasing after wildlife, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence and by lunging or barking at birds.

As stated previously, the Presidio Trust expressed concerns that a reduction in off-leash areas under the draft plan/EIS may increase [illegal] off-leash activity in the Presidio Area B, even though off-leash dog walking is not allowed in Area B (May 25, 2011 letter). The Presidio Trust was concerned that dog walkers from GGNRA may seek off-leash dog walking in more secluded areas within the Presidio to avoid overcrowding and to be less visible to law enforcement staff. If this occurs, it is possible that an increase in Presidio park operations may be required to enforce compliance with the on-leash requirements, thus negatively affecting the Presidio's annual budget. Additionally, private and commercial dog walkers wanting to walk more than six dogs may relocate to other SFRPD DPAs (which

would allow up to eight dogs) due to the limit on the number of dogs allowed per dog walker under alternative E. This could result in adverse impacts to vegetation, water quality, special-status species, soils, and visitor experience in the DPAs.

It is likely that visitors would continue to walk their dogs off-leash at Baker Beach, despite the decrease in the area available for off-leash dog walking (VSCA). Some visitors may choose to go to other sites for off-leash dog walking. These visitors would likely relocate to Mountain Lake Park (1.4 driving miles to 0.4 acre DPA) and Golden Gate Park (2.2 driving miles to 8.6 acre DPA). These DPAs would be impacted from the movement of visitors in terms of increased visitation and natural resource degradation, as mentioned above in alternative B, but impacts are expected to be less adverse under alternative E because fewer visitors would be likely to go to these sites. Similar to Crissy Field, private and commercial dog walkers wanting to walk more than six dogs at Baker Beach may relocate to SFRPD DPAs (which would allow up to eight dogs), or possibly Area B to illegally walk off-leash dogs, which may impact park operations and negatively affect the Presidio's annual budget.

Under alternative E, off-leash dog walking would no longer be permitted at Fort Miley, and it is anticipated that visitors may go to nearby dog walking areas to walk their dogs off leash. Impacts from an increase in visitors at nearby parks (Golden Gate Park, Alta Plaza Park, Glen Canyon, and Mountain Lake Park) are anticipated to be similar to those discussed under alternative C.

Availability of off-leash dog walking on Ocean Beach would be reduced, but dog walking on leash would be allowed in a large area. Some visitors who walk their dogs off-leash at Ocean Beach may also go to Pine Lake/Stern Grove (3.9 driving miles to 4.0 acre DPA), though most dog walkers currently using Ocean Beach are anticipated to continue to use Ocean Beach for off-leash dog walking under alternative E. If visitors choose to go to Pine Lake/Stern Grove, it would further exacerbate impacts on the natural resources and visitor experience. Impacts from the increase in visitation at these sites would be similar to the impacts listed above for Fort Funston. Dog walkers from Ocean Beach may also go to Golden Gate Park (2.5 driving miles to 8.6 acre DPA). The impacts resulting from increased visitation at Golden Gate Park would be similar to the impacts described under alternative B, but these impacts would be less adverse under alternative E because fewer visitors from Ocean Beach are anticipated to find dog walking elsewhere.

Under alternative E, visitors who currently visit Fort Funston would likely continue to take their dogs to Fort Funston for off-leash dog walking, although the area open to off-leash dog walking (VSCAs) would be somewhat reduced. However, some visitors may choose to visit nearby dog walking sites for off-leash dog walking under alternative E as well. These visitors would likely go to the DPAs at Pine Lake/Stern Grove (3.3 driving miles to 4.0 acre DPA), McLaren Park (6.4 driving miles to 59.9 acre DPA), or Bernal Heights (7.9 driving miles to 21 acre DPA) for an off-leash experience. Impacts at these sites would be the same as those listed under alternative B, but would be less adverse under alternative E because fewer visitors from Fort Funston are anticipated to relocate under this alternative. Commercial dog walking is considered high use at Fort Funston. Under alternative E, commercial and private dog walkers would be limited to six dogs under the permit required to walk more than three dogs. This limit may result in an increase in commercial dog walkers at the sites listed above, where the limit of dogs is higher (eight), which could further exacerbate impacts on the natural resources and visitor experience at these nearby dog walking areas.

Overall, alternative E is anticipated to have long-term, minor adverse impacts on nearby dog walking areas as a result of this final plan/EIS. None of the sites would be entirely closed to dogs under alternative E, all of the sites would allow on-leash dog walking, and many sites would have VSCAs. Commercial dog walking and permits to allow commercial and private dog walkers to have up to six dogs would be allowed under alternative E. Compared to alternative A, alternative E would increase the available on-

leash dog walking on trails/roads/beaches by approximately 22.7 miles but would decrease on-leash dog walking in other areas by approximately 49.92 acres; off-leash dog walking would be reduced on trails/roads/beaches by approximately 29.71 miles and in other areas by approximately 86.42 acres. Most visitors who currently use GGNRA sites for off-leash dog walking would continue to walk their dogs at the GGNRA sites, while some may find other places to walk their dogs off-leash in the few nearby areas that have more off-leash acreage. The movement of these visitors, particularly from those sites that are most heavily used for recreation, would result in some overcrowding at nearby parks, and would cause some physical deterioration of natural resources at these sites. These impacts would likely be most concentrated within the DPAs. However, the movement of visitors is anticipated to be low, since most GGNRA sites would provide sizeable amounts of off-leash dog walking. Thus, the level of impacts would be less than other action alternatives and a negligible to long-term, minor adverse impact is appropriate.

Alternative F: Preferred Alternative. Alternative F is the preferred alternative, and was developed in part in response to public comments received on the draft plan/EIS and consideration of additional data and studies. The preferred alternative includes a variety of visitor experiences by county for dog walkers (provides on-leash dog walking areas and dog walking under voice and sight control in VSCAs) as well as providing for protection of natural resources and visitor safety. Of the sites that currently have high levels of dog walking, Crissy Field, Fort Funston, Ocean Beach, and Rodeo Beach would all still have off-leash dog walking (in VSCAs), but these off-leash areas would be reduced in size. Muir Beach and Baker Beach would no longer have off-leash dog walking under the preferred alternative. It is possible that some dog walkers who currently walk their dogs off-leash at these sites would continue to use these same sites for dog walking, but would leash their dogs. However, it is also possible that visitors would take their dogs to nearby off-leash dog areas. The following paragraphs describe impacts to these nearby dog walking areas as a result of changes proposed under this final plan/EIS for the preferred alternative. The GGNRA sites are discussed in order of geographic location (north to south) and only when redistribution is anticipated.

Under the preferred alternative, off-leash dog walking would not be permitted at Alta Trail, Orchard Fire Road, Pacheco Fire Road, Oakwood Valley, or Marin Headlands Trails; except for Marin Headlands Trails, the available on-leash dog walking would increase at these sites. Commercial dog walkers that use Alta Trail in particular may move to other lands in Marin County. It is anticipated that dog walkers who wanted an off-leash dog walking experience would go to Camino Alto Open Space Preserve, or Blithedale Summit Open Space Preserve for off-leash dog walking. Impacts to natural resources at these sites as a result of increased visitation and overcrowding are anticipated to be similar to, or somewhat less than, the impacts described under alternative B since the preferred alternative allows dogs at Marin Headlands.

Because there would not be a VSCA at Muir Beach under the preferred alternative, it is anticipated that dog walkers preferring an off-leash site would go to Camino Alto Open Space Preserve (8.5 miles) and Blithedale Summit Open Space Preserve (7.3 driving miles) for a non-beach experience in a large area, or dog walkers would go to Rodeo Beach for an off-leash beach experience. Impacts at these non-GGNRA sites from increased visitation are expected to be less than the impacts discussed under alternative B because the increase in visitation is not expected to be high. Under the preferred alternative there would be a large VSCA at this site and at other GGNRA sites further south whereas there would be no VSCAs at any GGNRA sites under alternative B. Dog walkers using Rodeo Beach are likely to continue to use Rodeo Beach for off-leash and on-leash dog walking, since the VSCA under this alternative includes the entire main beach.

For Crissy Field, it is most likely that visitors would continue to use the site for off-leash dog walking, despite the decrease in the area available for off-leash dog walking compared to alternative A. However, some visitors may choose to go to other sites for off-leash dog walking. Visitors would most likely

relocate to Alta Plaza Park (1.8 driving miles to 0.5 acre DPA), Golden Gate Park (5.8 driving miles to 8.6 acre DPA), and Mountain Lake Park (3.1 driving miles to 0.4 acre DPA). Impacts to these sites are listed under alternative B, but impacts under alternative F are anticipated to be less adverse than under alternative B because fewer visitors would relocate to these sites from Crissy Field. Under the preferred alternative, both private and commercial dog walkers would be allowed to walk up to three dogs without a permit, but could apply for a permit to walk up to six dogs at seven park sites, including Crissy Field. As discussed under alternative B, restrictions on off-leash dog walking could result in adverse impacts on the Presidio Area B, lands managed by the Presidio Trust. The Presidio Trust expressed concerns that a reduction in areas available for dog walking could result in an increase in noncompliant off-leash dog walkers at the Presidio Area B, particularly in more secluded areas. These dog walkers could relocate from GGNRA sites near Presidio Area B, including Crissy Field, Fort Point, and Baker Beach. An increase in dog walkers at Area B could result in adverse impacts to vegetation, water quality, special-status species, soils, and visitor experience at this site. As stated previously, the Presidio Trust expressed concerns that a reduction in off-leash areas under the draft plan/EIS may increase [illegal] off-leash activity in the Presidio Area B, even though off-leash dog walking is not allowed in Area B (May 25, 2011 letter). The Presidio Trust was concerned that dog walkers from GGNRA may seek off-leash dog walking in more secluded areas within the Presidio to avoid overcrowding and to be less visible to law enforcement staff. If this occurs, it is possible that an increase in Presidio park operations may be required to enforce compliance with the on-leash requirements, thus negatively affecting the Presidio's annual budget.

Under the preferred alternative, there would not be a VSCA at Baker Beach, although on-leash dog walking would be allowed at a large section of the beach. Thus dog walkers may choose to continue to use Baker Beach, but with their dogs on-leash, or they may go to other sites for off-leash dog walking. These visitors would likely relocate to Mountain Lake Park (1.4 driving miles to 0.4 acre DPA) and Golden Gate Park (2.2 driving miles to 8.6 acre DPA). These DPAs would be impacted from the relocation of visitors in terms of increased visitation and natural resource degradation, as mentioned in alternative B. These impacts are expected to be reduced under the preferred alternative (compared to alternative B) because fewer visitors would be likely to go to these sites, since under the preferred alternative there would be VSCAs at other GGNRA sites but there would not be VSCAs at any GGNRA sites under alternative B.

Under the preferred alternative (alternative F), off-leash dog walking would not be permitted at Fort Miley, and it is anticipated that visitors may go to nearby dog walking areas for off-leash dog walking. Impacts from an increase in visitors at nearby parks (Golden Gate Park, Alta Plaza Park, Glen Canyon, and Mountain Lake Park) are anticipated to be similar to those discussed under alternative C.

Under the preferred alternative, there would be a VSCA at Ocean Beach, but the area would be reduced from the current area allowed for off-leash use. Although many dog walkers would likely continue to use Ocean Beach for walking their dogs without a leash, some may also go to Pine Lake/Stern Grove (3.9 driving miles to a 4.0 acre DPA). If visitors choose to go to Pine Lake/Stern Grove, it would further exacerbate impacts on the natural resources and visitor experience. Impacts from the increase in visitation at these sites would be similar to the impacts listed below for Fort Funston. Visitors from Ocean Beach may go to Golden Gate Park (2.5 driving miles to a 8.6 acre DPA). The impacts resulting from increased visitation at Golden Gate Park would be similar to the impacts described under alternative B, but these impacts would be less adverse under the preferred alternative since under the preferred alternative there would be VSCAs at Ocean Beach and other GGNRA sites, whereas there would be no VSCAs under alternative B.

Visitors who currently visit Fort Funston would likely continue to take their dogs to Fort Funston for off-leash dog walking, despite the decrease in the area available for off-leash dog walking, compared to

alternative A. However, some visitors may choose to visit nearby dog walking sites for off-leash dog walking, likely the DPAs at Pine Lake/Stern Grove (3.3 driving miles to 4.0 acre DPA), McLaren Park (6.4 driving miles to a 59.9 DPA), or Bernal Heights (7.9 driving miles to a 21 acre DPA) for an off-leash experience. Impacts at these sites would be the same as those listed under alternative B, including impacts to natural areas. However, the impacts would be less adverse under the preferred alternative because fewer visitors from Fort Funston are anticipated to relocate to these sites. However, commercial dog walking is considered high use at Fort Funston. Under the preferred alternative, commercial dog walkers with a permit are limited to six dogs. This limit would result in an increase in commercial dog walkers at the sites listed above, which are managed by SFRPD and where the limit on commercial dog walkers is eight dogs per person. The additional increase of commercial dog walkers could further exacerbate impacts on the natural resources and visitor experience at these nearby dog walking areas.

Overall, the preferred alternative is anticipated to have long-term, minor to moderate adverse impacts on nearby dog walking areas as a result of this final plan/EIS. Most visitors who currently use GGNRA sites for off-leash dog walking would likely continue to walk their dogs at the GGNRA sites where they currently walk, while some may decide to walk their dogs off-leash in nearby areas. There would be VSCAs at five GGNRA sites, including a newly established VSCA at Fort Mason. None of the GGNRA sites evaluated in this final plan/EIS would prohibit dogs under the preferred alternative and commercial dog walking, and permits for commercial and private dog walkers to have up to six dogs would be allowed, as previously discussed. Compared to alternative A, the preferred alternative would increase the available on-leash dog walking on trails/roads/beaches by approximately 3.17 miles but would decrease on-leash dog walking in other areas by approximately 26.67 acres; off-leash dog walking would be reduced on trails/roads/beaches by approximately 30.9 miles and in other areas by approximately 107 acres. The movement of some visitors to nearby dog walking areas, particularly those sites that are most heavily used for recreation, would result in overcrowding that would affect visitor experience as described above, and would cause the physical deterioration of natural resources at these sites. However the movement of visitors under the preferred alternative is anticipated to be low, since five GGNRA sites would still provide off-leash dog walking in VSCAs, all the sites considered for dog walking would allow areas for on-leash dog walking, and none of the sites would prohibit dogs. These impacts would likely be most noticeable within DPAs managed by SFRPD, which make up between 1 percent and 62 percent of the total area, as shown in table 33.

SUMMARY OF BACKGROUND INFORMATION USED TO DETERMINE IMPACTS TO NATURAL RESOURCES

VEGETATION AND SOILS

Site-specific, peer-reviewed studies have not been conducted at the GGNRA sites for the sole purpose of documenting impacts to vegetation or soils from dogs. While it is generally accepted and well documented that the presence of dogs in natural areas can result in disturbance to wildlife (as described in detail in the “Wildlife” section), specific published and peer-reviewed studies regarding impacts on soils and vegetation as a result of dogs are not as widely available as other studies documenting impacts as a result of domestic dogs. During the past six years, park staff has amassed scientific and technical information that is available on dog management–related topics. Data and information related to dog impacts on soils and vegetation, including waste issues, were collected from a variety of sources, including published journal articles and organizations that have conducted applicable studies. This section provides a general summary of the literature review conducted to determine the associations between dogs, soils, and vegetation, which are used for the purposes of the impacts analysis presented in this chapter. The potential disturbance from dogs to soils and vegetation at GGNRA is discussed in this section based upon the review and extrapolation of results from published and peer-reviewed studies. The

results of this literature review therefore provide a general nexus for dog-related impacts to soils and vegetation. The existing credible scientific literature is discussed in detail below and the potential impacts to vegetation and soils are described as a result of this information.

It has been documented that recreational activities can affect vegetation and soils, resulting in damage to plant communities (Cole 1978, 281; Douglass et al. 1999, 9.2). In recreational/park settings, domestic dogs and people are generally not mutually exclusive and it is therefore difficult to isolate the impacts and effects of dogs alone on soils and vegetation. It is important to note that dogs are viewed as a contributing factor to impacts associated with soils and vegetation, but the total elimination of dogs in the park would not eliminate effects on soils and vegetation, because visitors without dogs would continue to visit the park and use the trails/roads at GGNRA. Disturbance by all manner of visitors as well as by dogs has occurred and currently occurs in GGNRA as an existing condition. However, visitors with dogs could impact natural resources to a greater extent than visitors without dogs.

Soils and vegetation can be both indirectly and directly affected by recreational activities. Vegetation can be affected indirectly by trampling through the consolidation of the soil and directly by treading upon the plant itself (Bates 1935, 476). Trampling, which initially bends and weakens leaves and branches, can ultimately cause breaking and injury to the plant (Douglass et al. 1999, 9.3; Bates 1935, 476). Some plant species can be damaged and completely destroyed by the action of treading, while other species are comparatively immune to harm of this kind (Bates 1935, 476). Vegetation along trails is particularly vulnerable to damage (Cole 1978, 281). Sensitive environments can be subject to physical disturbance by dogs (through digging or bed-making), and dogs could damage vegetation and soils, with resulting influences on vegetation, soils, and wildlife such as small mammal populations (Sime 1999, 8.9). “High foot traffic (both people and dogs) resulting from an off-leash area would result in trampling and disturbance of vegetation” (Andrusiak 2003, 5). In addition, heavy off-leash dog use increases deterioration of native dune communities (Shulzitski and Russell 2004, 5). As cited in Andrusiak (2003, 3.2), the Greater Vancouver Regional District collected observational data on dog walkers and dogs in individual regional parks and observed dogs in the water and uprooting beach and dune vegetation by digging. Both dog and human traffic compact the soil and crush vegetation and dogs can dig in the soils; this is unlikely to have significant effects on the unvegetated areas, but could contribute to degradation of vegetated areas (Andrusiak 2003, 3.2).

The preservation of natural resources is addressed in 36 CFR 2.1. Vegetation damage is described in 36 CFR 2.1 (a) (1) (ii)). The following is applicable to vegetation and soils, and is prohibited: possessing, destroying, injuring, defacing, removing, digging, or disturbing from its natural state. NPS rangers have recorded damages to vegetation from dogs at GGNRA that are in violation of the above regulation. Dog-related incidents were recorded at GGNRA using law enforcement’s criminal incident records. From 2001 through 2011, a total of 4,932 dog-related incident reports were filed at the park, which represents 11 percent of all incident reports filed during that period at GGNRA.

Trailside plant communities usually contain locally occurring species and invaders from other sources, which are favored by the environmental conditions adjacent to trails (Cole 1978, 282). Dogs (as well as horses and hikers) may also alter dispersal of native and non-native plants along trail corridors, as seeds that adhere to their paws and fur are then transported to other locations, possibly resulting in the spread and establishment of new populations of invasive and/or non-native plants (Sime 1999, 8.9-8.10). Park staff have observed the creation of social trails by dogs and dog walkers also increases erosion, damages root systems, further fragments habitat, and can alter reproductive success by isolating plants, thus reducing the opportunities for cross-pollination and effective seed dispersal. However, this has not been documented in peer-reviewed studies.

The primary detrimental soil impacts from recreation are loss of productivity, erosion, compaction, rutting, and displacement (Douglass et al. 1999, 9.5). Impacts to soils can generally result in impacts to vegetation. For example, the changes in soils as a result of trampling and compaction can affect plant growth and survival, although the effects are highly variable and dependent upon existing conditions (Kuss 1986, 643 and 647). Park users can also damage and destroy vegetation and create soil compaction, which reduces infiltration of moisture into the soil and increases the volume of runoff and the potential for loss of topsoil (Douglass et al. 1999, 9.3). Sources of soil disturbance in the park include natural forces, such as wind and weather, and human disturbance, such as development, stream diversion, road or trail creation for cars, bicycles, hiking, running, or horseback riding, and dog walking. Trampling and digging by dogs can lead to accelerated erosion of cliffs and dunes at GGNRA, which can also be exacerbated by high visitor traffic. Heavy dog use can cause soil compaction or erosion. Although this has not been documented in peer-reviewed studies, these affects have been observed by park staff at GGNRA and are visible from aerial photography of Fort Funston. In areas with unconsolidated or unvegetated surficial deposits, dog traffic can physically move the soil, but other factors also influence soils such as human traffic, wind, and storm events. Dog traffic can compact the soil, which could kill vegetation and expose the soil to erosion although this has not been documented in peer-reviewed studies. Soil compaction is common along social trails that have been created by—and are heavily used by—bikers, hikers, runners, and dog walkers. Dogs and dog walkers as well as hikers and equestrians that do not stay on designated trails and venture off trail create social trails that become denuded of vegetation and result in increased soil compaction at GGNRA. This has occurred at Homestead Valley, Alta Trail, Oakwood Valley, Marin Headlands, Baker Beach, Lands End, Fort Funston, Mori Point, and Sweeney Ridge/Cattle Hill.

Dog waste contains nutrients and can increase the amount of nitrogen and phosphorus in the soil (CRCCD 2009, 1). Soils and vegetation can be affected by dogs through defecation and urination, although this has not specifically been documented in peer-reviewed studies. The act of "marking" (scent marking with urine) could also affect vegetation by concentrating nutrients in particular areas. Although nitrogen and phosphorus are nutrients required for plant growth, dog waste could increase the amount of nutrients in the soil above natural levels; dog urine could increase the natural salinity of soil. An increase in nutrients from dog excrement in concentrated areas could result changes in plant species and distribution as well as changes in soil organisms. Nutrient addition to nutrient-poor serpentine soils can alter soil chemistry, which may result in changes to the plants that occur in these soils (USFWS 1998a, I-12). At sites with serpentine soils, adding nutrients could change soil composition and eventually cause detrimental effects on sensitive plant species adapted to serpentine soils.

At GGNRA, it is required by law that people clean up dog fecal matter, as stated in the GGNRA Compendium (appendix B). Violations have been written for park visitors at GGNRA who have not cleaned up after their dogs, under 36 CFR 2.34(a)(4), creating a "physically offensive condition" and 36 CFR 2.15 (a) (5), "failing to comply with pet excrement disposal conditions established by the superintendent." When visitors fail to comply with pet excrement removal requirements, dog waste can accumulate in the soils and affect the vegetation. The total amount of waste can become substantial in certain areas, depending on the number of dog owners in the area and their frequency of use of the area as observed by park staff at GGNRA. Natural nutrient levels in the soils in the park can also be altered by dog waste (NPS 1999, 40).

In conclusion, very little peer-reviewed literature exists documenting disturbance to vegetation and soils specifically as a result of domestic dogs in recreational/park settings. However, NPS rangers have observed dogs affecting soils and vegetation at GGNRA sites. Dogs could affect vegetation and soils by trampling and digging. When dogs are on a 6-foot leash, it is unlikely that digging or bed-making would occur due to proximity to the owner and the physical restriction of the leash. When visitors fail to comply with pet excrement removal requirements, dog waste can accumulate in the soils and affect the

vegetation. Management suggestions such as physically restraining dogs (on a leash), fencing sensitive areas, and prohibiting dogs from certain areas would protect vegetation and soils, similar to management suggestions included in the recently released *Environmental Impact Report: Significant Natural Resource Areas Management Plan* (SNRAMP) (SFPD 2011).

WILDLIFE

Very few site-specific, peer-reviewed studies have been conducted at GGNRA for the purpose of documenting impacts to wildlife as a result of dogs. Numerous other studies from outside the park have documented disturbance to wildlife species as a result of domestic dogs in similar habitats, with similar species, or with similar conditions that occur in the park. During the past six years, park staff have collected available scientific and technical information on dog management-related topics. Types of information collected include dog management policies from other jurisdictions, shorebird data from scientists and organizations that monitor San Francisco Bay Area shorebird populations, and other topics including dog interactions with wildlife, diseases, and waste issues. The existing credible scientific literature is discussed in detail below and the potential impacts to wildlife were described as a result of this information.

This section provides some excerpts from recent incident records at the park regarding disturbances to wildlife followed by a general review and summary of the literature. The literature review was conducted to document associations between dogs, wildlife, and diseases associated with wildlife. The information has been used to supplement other information in the impacts analysis.

At GGNRA, 36 CFR 2.2 covers the protection of wildlife. Wildlife disturbance is described in 36 CFR 2.2 (a) (2) and the following is prohibited: feeding, touching, teasing, frightening, or intentional disturbing of wildlife nesting, breeding, or other activities. Dog-related incidents were recorded at GGNRA using law enforcement's criminal incident records. From 2001 through 2011, a total of 4,932 dog-related incident reports were filed at the park, which represents 11 percent of all the incident reports filed for GGNRA.

Numerous studies have documented disturbance to wildlife species as a result of domestic dogs in recreational/park settings (Burger et al. 2004, 287; Davidson and Rothwell 1993, 101; George and Crooks 2006, 14; Kirby et al. 1993, 55; Lafferty et al. 2006, 2222; Lenth et al. 2008, 223; Miller et al. 2001, 131, 118; Smit and Visser 1993, 10; Thomas et al. 2003, 69; Yalden and Yalden 1990, 249). In recreational/park settings, domestic dogs and people are generally not mutually exclusive and it is therefore difficult to isolate the impacts and effects of dogs alone on wildlife. It is important to note that dogs are viewed as a contributing factor to impacts associated with wildlife, and the total elimination of dogs in the park would not eliminate effects on wildlife, because visitors without dogs would continue to visit the park and use the trails/roads at GGNRA. Disturbance by all manner of visitors and any associated recreation equipment as well as by dogs has occurred and currently occurs in GGNRA as an existing condition. Studies have shown that people with dogs disturb wildlife more than people alone (Yalden and Yalden 1990, 248-249) and that dogs may pose a different kind of threat compared to a pedestrian (Miller et al. 2001, 130). Studies have also suggested that dogs, particularly while off leash, increase the radius of human recreational influence or disturbance beyond what it would be in the absence of dogs (Banks and Bryant 2007, 2; Sime 1999, 8.4; Miller et al. 2001, 125; Lafferty 2001b, 318). For example, golden plovers (Yalden and Yalden 1990), marmots (Mainini et al. 1993, 162), mule deer (Miller et al. 2001, 131), squirrels, and rabbits (Lenth et al. 2008, 218) exhibited a greater response or reduced levels of activity when human hikers were accompanied by a dog compared to hikers without a dog. "Authors of many wildlife disturbance studies concluded that dogs with people, dogs on leash, or loose dogs all provoked the most pronounced disturbance reactions from their study animals" (Sime 1999, 8.2). Animals most often affected by disturbance from dogs include deer, small mammals, and birds, although larger

mammals such as bobcats and coyotes can also be affected by disturbance (George and Crooks 2006, 14-15).

The majority of domestic dogs in the United States are pets that have their food requirements met at home, thus allowing them ample energy to interact with wildlife (Lenth et al. 2008, 218). Domestic dogs behave as carnivores and at some level, still maintain instincts to hunt and/or chase (Sime 1999, 8.2) and are capable of catching and killing prey species (Lenth et al. 2008, 218). Dogs may disturb wildlife either accidentally or deliberately through chase (Andrusiak 2003). "Even if the chase instinct is not triggered, dog presence in and of itself may be an agent of disturbance or stress to wildlife" (Sime 1999, 8.3; Lenth et al. 2008, 218). "The response of animals to predation risk is exactly the same as the response to disturbance; a species with suitable habitat nearby may avoid disturbance simply because it has alternative sites to go to…By contrast, animals with no suitable habitat nearby will be forced to remain despite the disturbance, regardless of whether or not this will affect survival or reproductive success" (Gill et al. 2001, 266).

Potential direct impacts to wildlife as a result of interactions with or disturbance from domestic dogs are broadly classified into three categories: harassment, injury, or death. Secondary or indirect impacts include displacement, avoidance, abandonment of areas and habitat, physical alteration of habitat, and potential disease transmission. Harassment is defined as the disruption of normal maintenance activities, such as feeding, resting, or grooming and can include disrupting, alarming, or even chasing after wildlife. If dogs chase or pursue wildlife, injuries to wildlife could be sustained directly or indirectly as a result of accidents that occur during the chase rather than direct contact with the dog (Sime 1999, 8.4). Injuries sustained may result in death or may compromise the animal's ability to carry on other necessary life functions resulting in eventual death, or reduced reproductive success (Sime 1999, 8.4). Dogs on leash disturb wildlife less frequently than dogs off leash, but actual direct injury or mortality to wildlife by dogs in either situation is rare (Andrusiak 2003).

The type and intensity of disturbance to wildlife by dogs is based upon many factors, including the type and sensitivity of wildlife species; environmental and seasonal conditions; individual animal experience and body condition; habitat type; type, level and regularity of visitor use; among other various factors. 2008, 222; Banks and Bryant 2007, 2-3). The modification of normal behaviors such as feeding, nesting, grooming, and resting can occur through repeated disturbance and wildlife may relocate from preferred habitat to other areas to avoid harassment (Sime 1999, 8.4).Additionally, wildlife behavioral responses to disturbance may include reduced prey intake rates, increased vigilance levels, reduction in levels of parental care, or increased time spent in flight, all of which have the potential to affect survival or fecundity, which could possibly affect overall population size (Gill et al. 2001, 266). From a population viewpoint, species most likely to be adversely affected by disturbance include wildlife with high fitness costs (Gill et al. 2001, 266), which influences the ability to survive and reproduce. The type and intensity of disturbance to wildlife by dogs is based upon many factors, including type of wildlife species (mammals versus shorebirds), habitat type (coastal habitat versus grassland), type of study (on-trail versus off-trail), among other various factors. Dog presence has been correlated with altered patterns of habitat use for wildlife species (Lenth et al. 2008, 222). The modification of normal behaviors such as feeding, nesting, grooming, resting can occur through repeated disturbance and wildlife may relocate from preferred habitat to other areas to avoid harassment, including the displacement of wildlife from public to private lands (Sime 1999, 8.4). Reactions are most often short term but may result in responses that range from direct and obvious (flight, confrontation) to covert and physiological (loss of energy, stress), which complicates the documentation of disturbance to wildlife from the presence of dogs (Sime 1999, 8.4). Although disturbances are generally nonlethal and temporary, the cumulative effects of disturbance may be significant, particularly to sensitive species (Lafferty et al. 2006, 2217). Chronic, cumulative disturbance could ultimately reduce shorebird reproduction and survivorship (Lafferty 2001a, 1949). Additionally, wildlife behavioral responses to disturbance may include reduced prey intake rates,

increased vigilance levels, reduction in levels of parental care, or amount of time spent in flight, all of which have the potential to affect survival or fecundity, which could possibly affect overall population size (Gill et al. 2001, 266). From a population viewpoint, species most likely to be adversely affected by disturbance include wildlife with high fitness costs but little excess habitat available; these species are thus constrained to stay in disturbed areas and to suffer the costs in terms of reduced survival or reproductive success (Gill et al. 2001, 266).

Peer-reviewed literature has documented disturbance to wildlife species as a result of domestic dogs in recreational/park settings. Wildlife species have different threshold responses to disturbance (Pfister et al. 1992, 118), and therefore, a more detailed discussion of dog impacts to wildlife were separated into the following categories for this section: shorebirds, landbirds (or songbirds), land mammals, and marine mammals.

Birds (Shorebirds and Landbirds)

Birds usually are more sensitive to the approach of dogs than to the approach of human beings (Andrusiak 2003, ES) and the "presence of dogs may intensify bird responses to pedestrians" (Sime 1999, 8.10). Disturbance by dogs generally occurs when unleashed dogs chase feeding and roosting birds; however, birds can also be disturbed by the physical proximity of on-leash dogs and/or by barking (Andrusiak 2003, ES). It has been shown that birds react when dogs accompany walkers and that even dogs restrained on leashes can disturb birds sufficiently to induce displacement and cause a decrease in local bird fauna (Banks and Bryant 2007, 2). Although leashing makes it difficult for pets to chase birds and reduces the probability of disturbance and the number of birds impacted per disturbance, leashed pets still disturb birds (Lafferty 2001a, 1955). "Dogs can disrupt habitat use, cause displacement responses, and injure or kill birds" (Sime 1999, 8.10). In addition, the predictability of disturbance is reduced when dogs are off leash. Dogs that are off leash in natural areas during the breeding season can result in a higher level of disturbance to wildlife, including ground-nesting or colonially nesting birds (Andrusiak 2003, 20; Sime 1999, 8.4, 8.9). Birds may not habituate to dog disturbance because it is unpredictable and represents an actual physical threat (Andrusiak 2003, 3.2). Some studies have shown that local wildlife does not become habituated to continued disturbance by dogs (Banks and Bryant 2007, 2). Because shorebird species have different threshold responses to disturbance (Pfister et al. 1992, 118), the discussion of impacts to shorebirds was separated from impacts to landbirds (or songbirds) in this section as described in the paragraphs that follow.

Shorebirds

Beach nesting bird species are presumed to be the most sensitive species to disturbance, particularly several coastal plovers in the genus *Charadrius* that are endangered or threatened (Lafferty 2001b, 315) and are very likely to leave an area altogether if disturbed (Kirby et al. 1993, 56-57). Shorebirds such as the sanderling, long-billed curlew, marbled godwit, and elegant tern are considered watch list species that are sensitive to disturbance. One of the reasons that shorebirds are so vulnerable to disturbance is the lack of cover available along open beaches and shorelines, compared to more vegetated habitats that support dense cover (Andrusiak 2003, ES). Beach areas are susceptible to the usual beach activities, such as walking, jogging, fishing, and dog walking (Burger et al. 2004, 284) which can also affect shorebirds. Besides people, domestic dogs, equestrians, crows, and other birds have also been observed disturbing shorebirds (Lafferty 2001b, 318). Additional sources of disturbance to shorebirds on GGNRA beaches include aircraft, kite flying, hawks and falcons, equipment on the beach, and beach patrols. The presence of people on beaches where shorebirds congregate in foraging flocks is likely to be disruptive (Burger et al. 2004, 284) and some studies have suggested that the birds are not habituating to the presence of people (Burger et al. 2004, 286).

Although a variety of factors, including humans, cause disturbance, numerous studies have shown that shorebirds are particularly sensitive to dogs and have documented disturbance to shorebirds as a result of dogs at recreational/park settings (Kirby et al. 1993, 55; Smit and Visser 1993, 10; Yalden and Yalden 1990, 248-249; Thomas et al. 2003, 69; Lafferty 2001b, 318; Lafferty et al. 2006, 2222; Burger et al. 2004, 287; Davidson and Rothwell 1993, 101; Lafferty 2001a, 1955-1956). The sensitivity of shorebirds to disturbance by dogs may result from previous experiences of being chased or because birds instinctively view dogs as predators (Gabrielsen and Smith 1995). In a study of waterfowl and shorebirds, Davidson and Rothwell (1993) conclude that, on tidal flats, moving people and animals (especially dogs) generally creates greater disturbance than sedentary people (Davidson and Rothwell 1993, 101). Lafferty (2001a, 1958) states that in general, shorebirds at a Santa Barbara, California, beach study were very sensitive to dogs on the beach and some dogs may actively chase birds for prolonged periods (Lafferty 2001a, 1950). In a study conducted by Kirby et al. (1993) on sandy beaches with recreational activities, it was documented that shorebirds are disturbed by both walkers and dogs, with dogs responsible for 27 to 72 percent of actual disturbances and walkers responsible for 20 to 34 percent of disturbance to shorebirds (Kirby et al. 1993, 55). The same study recorded that the most common response of shorebirds to disturbances by dogs was to take flight but then return to the area once the disturbance had passed (Kirby et al. 1993, 56-57). A study by Smit and Visser (1993) observed that dogs running around on tidal flats are "very disturbing" to shorebirds (Smit and Visser 1993, 9-10). In Burger et al. (2004), research indicated that dogs are currently the prime and most important factor disturbing the shorebirds at protected beaches along Delaware Bay (Burger et al. 2004, 287). The effect of humans and dogs on the beaches can be disruptive, especially when human activity is intense, or people are on the beaches for long periods of time (Burger et al. 2004, 287). Although walking dogs on leash makes it difficult for dogs to chase birds and reduces the probability and the number of disturbances to birds, dogs walked on leash still disturb birds (Lafferty 2001a, 1955).

Dogs can disrupt habitat use, cause displacement responses, and possibly injure or kill birds (Sime 1999, 8.10), although as stated above, direct injury or mortality is rare (Andrusiak 2003). Migrating species, especially shorebirds, use stopover areas to rest and feed, replacing energy consumed between stops (Burger et al. 2004, 287; Pfister et al. 1992, 115). Dogs disturbing foraging birds may diminish a bird's foraging time and can result in a loss of energy required to migrate, and can significantly affect their survival during migration (Andrusiak 2003). Even if dogs do not directly affect habitat or kill birds, disturbances cause birds to suspend feeding and/or expend energy in flight, movement, or vigilance (Lafferty 2001a, 1950). Shorebirds are known to have relatively high metabolic rates compared to other bird species and use more energy than other non-passerine birds of their size (Kersten and Piersma 1987, 182, 185). Therefore, even short-term disturbances to feeding and migration behavior could affect energy expenditure in shorebirds (Kersten and Piersma 1987, 182, 185).

Bird responses to "danger" through disturbance may involve becoming immobile or crouching down, rushing for cover, or even approaching the predator in a distraction display when defending young (Davidson and Rothwell 1993, 97). Many anti-predator responses, however, involve taking flight, which is a costly activity in terms of energy expenditure (Davidson and Rothwell 1993, 97). Waterfowl, especially on nonbreeding grounds, mostly live in open habitats and generally use flight as a response to being disturbed. Flying is a major natural element in the life of birds, but it uses a lot of energy and the increased need in order to fly to escape disturbance could affect survival (Davidson and Rothwell 1993, 97). Specifically, foraging can be disrupted by the presence of people and dogs on foraging beaches, and shorebirds respond by flying away (Burger et al. 2004, 287). It has been suggested that when migrant shorebirds have a limited period of time at a stopover place, with limited foraging space, behavioral disruptions during foraging have consequences in terms of needed weight gain (Burger et al. 2004, 287). Therefore, in response to flying away, shorebirds could either increase their energy intake at their present (disturbed) feeding sites when undisturbed, or move to an alternative feeding site (Davidson and Rothwell 1993, 97). An alternative feeding site may not necessarily be preferred habitat of the disturbed shorebirds.

Shorebirds roosting or feeding in areas accessible to on-leash or off-leash dogs may relocate to areas of the beach where dogs are prohibited, or may use areas only when dogs are absent (Andrusiak 2003, ES). This relocation could use energy that birds require to survive during migration (Andrusiak 2003, ES). Therefore, any overall reduction in their energy balance as a result of these responses is the impact of disturbance on energy reserves and ultimately survival (Davidson and Rothwell 1993, 97). Studies have shown that disturbance at high tide resting areas at a coastal barrier beach displaced shorebirds and seemed to cause long-term declines in abundance (Pfister et al. 1992, 115). The most serious disturbance in a study conducted by Pfister et al. in 1992 was likely caused by pedestrians and dogs, but it is important to note that a vehicle count was used in this study as an index of disturbance (Pfister et al. 1992, 118). Disturbance has contributed to the decline in a number of shorebird species, including two species studied by Pfister et al. (1992), the red knot and short-billed dowitcher (Pfister et al. 1992, 123). Disturbances as a result of domestic dogs can also affect shorebird survival during the nesting period. Dogs can cause temporary abandonment of shorebird nests containing eggs or young, as well as crushing eggs or preying on young (USFWS 2007a, K-7). If a parent shorebird is forced away from a nest, its eggs may die due to exposure or predation (Lafferty 2001b, 315). Shorebird studies have also indicated that front-beach or low beach (near the water's edge) species are more severely affected by disturbance than back-beach (or upper beach) species (Pfister et al. 1992, 123; Lafferty 2001a, 1960). Front-beach species are exposed to more direct human disturbance because recreational activities are concentrated on the front side of the beach.

Surveys conducted during the years 1993 through 2006 show that sanderlings are the most common shorebird on all beaches at GGNRA (Beach Watch 2006, 10). A study conducted by Thomas et al. (2003) in Monterey on the Central California coast found that the number of people, type of human activity, and the presence of free-running dogs had a significant effect on the foraging time of sanderlings (Thomas et al. 2003, 69). Although the sample size was low, the most significant negative factor was the presence of free-running dogs on the beach (Thomas et al. 2003, 67). At the study sites, leash laws were in existence, but the majority of people still let their dogs run free (Thomas et al. 2003, 71).

Landbirds (Songbirds)

This category encompasses landbird species such as songbirds in grasslands, forested lands, shrublands, and other non-coastal habitats. In a study of forested areas by Banks and Bryant (2007), ground-dwelling birds were the most affected by dogs (Banks and Bryant 2007, 2). This study suggested that birds were seeking refuge away from the immediate vicinity of the threat from dog walking and confirmed that birds responded uniquely and additively when dogs accompany walkers (Banks and Bryant 2007, 2). Even dogs restrained on leash can disturb birds sufficiently to induce displacement and cause a decrease in local bird fauna (Banks and Bryant 2007, 2). However, other studies conducted in grasslands for vesper sparrows (*Pooecetes gramineus*) and western meadowlarks (*Sturnella neglecta*) have shown that the smallest area of influence, the shortest flush distance, and the shortest distance moved resulted from the dog-alone treatment, and that these responses were greater for the pedestrian-alone and dog-on-leash treatments (Miller et al. 2001, 124). Even though the dog-alone treatment resulted in the smallest area of influence for grassland birds in the study, the authors state that the area of influence will increase if recreationists allow their dogs to roam away from a trail (Miller et al. 2001, 131). This study also stated that either dogs were not viewed as a threat to songbirds or that dogs may have posed a different type of threat in which the birds responded by holding their position until the last moment, trying to remain undetected (Miller et al. 2001, 129-130). One shortcoming of the study was that the authors did not stop and view the subjects for extended periods of time (Miller et al. 2001, 131). For American robins (*Turdus migratorius*) in the forested habitat, the area of influence, flush distance, and distance moved did not generally differ between the pedestrian-alone and dog-on-leash treatments (Miller et al. 2001, 130). This is possibly due to the fact that the domestic dog is not typically considered a significant predator on songbirds and these bird species may not have perceived dogs as a threat (Miller et al. 2001, 130).

Another songbird study to document the effects as a result of on-leash and off-leash dog areas was completed by Forrest and St. Clair (2006) in deciduous, coniferous, and grassland communities of an urban park. The songbird species black-capped chickadee was the most abundant species observed in the study, accounting for 30 percent of all observations. Other common species, each accounting for at least 5 percent of all observations, were the least flycatcher, red-eyed vireo, red-breasted nuthatch, and yellow warbler (Forrest and St. Clair 2006, 55). The data showed no difference in the diversity and abundance of birds within on-leash and off-leash areas (Forrest and St. Clair 2006, 55). The results of this study concluded that off-leash dogs have no impact on the diversity or abundance of birds because these species are fairly tolerant of moderate levels of human activity (Forrest and St. Clair 2006, 61). In conclusion, it is possible that dogs can disturb landbirds such as songbirds, although ground-dwelling birds may be particularly affected by dogs (Banks and Bryant 2007, 2), while other songbirds may be more tolerant to disturbance by dogs (Forrest and St. Clair 2006, 55).

Land Mammals

As stated above, domestic dogs behave as carnivores (Lenth et al. 2008, 218) and animals that are prey of wild canids (carnivorous mammals of the family *Canidae*, which includes dogs, wolves, foxes, coyotes, and jackals) may perceive dogs as predators and may be subject to nonlethal, fear-based alterations in physiology, activity, and habitat use (Lenth et al. 2008, 218). When dogs participate in "marking" (scent marking with urine), it could also attract wildlife or cause wildlife to avoid an area. The "impacts of dogs on native carnivores are not well understood, but may include disruption of carnivore behavior through chasing after, barking, and scent marking via urine and scat" (George and Crooks 2006, 14). As cited in Lenth et al. (2008, 223), the City of Boulder Open Space and Mountain Parks has noted that dogs often defecate very soon after arriving at a trail, and many visitors do not walk dogs much beyond the trailhead. Recreational trails with abundant dog scent could appear to carnivores to be linear dog territories, necessitating increased vigilance and activity (Lenth et al. 2008, 219). In a study conducted by George and Crooks (2006, 14-15), coyotes specifically showed a trend of temporal displacement in response to dogs, and bobcats were also affected by the presence of dogs. These inverse correlations of dog and native carnivore activity in areas that allow dogs indicate that native carnivores may be avoiding trailheads where dog activity is concentrated (Lenth et al. 2008, 223). Lenth et al. (2008, 223) also found that wildlife species that are preyed upon by native canids demonstrated sensitivity to the presence of domestic dogs (Lenth et al. 2008, 223). Reed and Merenlender (2008 and 2011) studied the impacts of recreation on native and non-native carnivores (including domestic dogs) using scat samples from 28 parks and preserves in northern California (Reed and Merenlender 2008, 1; Reed and Merenlender 2011, 504). In the 2008 study, domestic dogs were detected (through scat samples) more frequently and in much greater densities than other carnivores in the recreation areas, but there was no evidence to suggest that native carnivores avoided recreational trails (Reed and Merenlender 2008, 7). The 2008 study concluded that native carnivore density was much higher in protected areas compared to areas with recreation (Reed and Merenlender 2008, 1). Similarly, the 2011 study found that native carnivore species richness was greater and the relative abundances of native coyotes (*Canis latrans*) and bobcats (*Lynx rufus*) were greater in the sites that did not allow human visitors or dogs (Reed and Merenlender 2011, 504). However, abundances of bobcats and all carnivores declined as the number of visitors increased (Reed and Merenlender 2011, 504). One shortcoming of the Reed and Merenlender studies was that the 2008 study did not describe how human recreation disturbs wildlife (Reed and Merenlender 2008, 7) and the 2011 study did not separate the effects of humans from the effects of dogs (Reed and Merenlender 2011, 513). Additionally, scat may be an unreliable indicator for sites that allow dogs, since dogs can eat or roll in scat of other wildlife.

In addition to affecting carnivore behavior, dogs can physically damage burrows used by ground-dwelling mammals (squirrels, pocket gophers, chipmunks, and other rodents) by digging up or collapsing the burrows. Although not occurring in GGNRA, a study of marmots by Mainini et al. (1993) provides some

indication of potential responses of ground-dwelling mammals to the presence of dogs and/or people. This study showed that the reaction of marmots was least when hikers remained on trails and greatest from hikers with a free-running dog (Mainini et al. 1993, 163). With trail hikers and no dogs, the marmots hardly ever took refuge in the burrows; this happened more often in the experiments when these hikers had a leashed dog and with cross-country hikers (Mainini et al. 1993, 163). Even more animals took to their burrows in the experiments with burrow hikers (people walking off the trail and across the marmot burrow) or hikers with free-running dogs (Mainini et al. 1993, 163). A free-running dog elicited more whistles and more animals retreated into their burrows than in the experiments with a leashed dog on the trail, which shows that a free-running dog represents a greater risk than a leashed dog (Mainini et al. 1993, 164). Marmots observed were located in the vicinity of frequently used trails; comparison studies of marmots living in more remote areas had even stronger reactions (Sime 1999, 8.11). Other studies have shown that small mammals, including squirrels (*Sciurus* spp.) and rabbits (*Sylvilagus* spp.) have exhibited reduced levels of activity within 50 meters of trails in areas that allowed dogs when compared with areas without dogs (Lenth et al. 2008, 218).

In conclusion, dogs behave as carnivores (Lenth et al. 2008, 218) and could affect wildlife such as small mammals through chasing and occasionally capturing individuals as well as digging and collapsing burrows. Dogs have the potential to encounter larger mammals such as deer, bobcats, or coyotes and may either displace these larger mammals from high quality habitat that is degraded by the presence of dogs (George and Crooks 2006, 14-15) or cause increased vigilance or activity (Lenth et al. 2008, 219).

Marine Mammals

There is documentation of marine mammal strandings as well as healthy animals hauling out on the GGNRA beaches or intertidal, rocky areas (MMC 2010, 1). Marine mammals, including seals, sea lions, and walruses, that strand on beaches or other shoreline areas are often injured or ill, and additional stress from disturbance, such as dogs biting, barking at, or climbing on the animals, can occur from unleashed dogs in a VSCA or noncompliant dogs. Healthy marine mammals can also haul out on GGNRA beaches, and at most haul-out sites consistently used at GGNRA, dogs cannot gain access to marine mammals. At the beach in the Crissy Field Wildlife Protection Area (WPA), three elephant seals (a fully protected species in California) hauled out at different times in December of 2009 and January of 2010. Off-leash dogs detected the scent of the stranded elephant seals and moved toward the seals on the beach. Stranded marine mammals and marine mammals that have hauled out on GGNRA beaches often attract the attention of dogs and people. The Marine Mammal Center data indicate that marine mammals are often harassed by dogs. Dogs have been observed surrounding marine mammals, chasing them back to the water, and in one case, attacking a California sea lion (MMC 2012a, 1). Depending on the circumstance, the NPS may temporarily fence, sign, and close areas where marine mammals are hauled out, particularly where visitor use is more moderate as opposed to areas of intense use during good weather. On-leash dog walking would restrain or prevent access to stranded marine mammals and marine mammals that haul out on GGNRA beaches and rocky, intertidal habitat. However, even leashed dogs may disturb and cause additional stress to marine mammals. It is important to note that all marine mammals in GGNRA are protected by the *Marine Mammal Protection Act*, and any disturbance to a marine mammal would be in violation of this act. The impacts on hauled out marine mammals may be different from those on stranded marine mammals, and include harassment to the extent that they are flushed back into the water and do not return to the beach, which could inhibit establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand.

In conclusion, marine mammals that haul out or strand at GGNRA could be affected by dogs as has been previously demonstrated through dogs approaching, biting, barking at, or climbing on/surrounding the mammals, or even chasing hauled out mammals back into the water (MMC 2010).

Disease

Domestic dogs that are not vaccinated can potentially introduce diseases (distemper, parvovirus, and rabies) and transport parasites from, or transmit diseases to, wild animals or wildlife habitats (Sime 1999, 8.2), although the role of dogs in wildlife diseases is not well understood (Sime 1999, 8.4). While dogs can be vaccinated against many of these diseases, adherence to recommended vaccination schedules is necessary for even adult dogs to maintain immunity (Sime 1999, 8.12). Domestic dogs can be vectors for transmission diseases as canine distemper, which can affect wild carnivore species (Sime 1999, 8.9). Viruses related to the canine distemper virus have been documented in the deaths of a wide variety of wild animals from seals, dolphins (Delphinidae), and porpoises (Phocoenidae) in Russia to lions in Africa, but there are fewer documented instances of deaths caused by canine distemper in areas where domestic animals are regularly vaccinated (Mills 1999). Dog feces have been implicated in the transmission of muscle cysts (*Sarcocystis* spp.), which can infect a variety of ungulate species, including mule deer and white-tailed deer. Dogs may also introduce diseases or parasites to small mammals. While dog impacts on wildlife likely occur at the individual scale, the results may still have important implications for wildlife populations (Sime 1999, 8.4). Rabies is a preventable viral disease transmitted in the saliva of infected mammals and is the most common source of infection for humans and domestic animals such as dogs (City and County of San Francisco 2010, 1). More than 90 percent of all animal rabies cases reported to the Centers for Disease Control and Prevention (CDC) each year occur in wild animals like raccoons, skunks, bats, and foxes (City and County of San Francisco 2010, 1). In California, domestic animals, farm animals, and pets such as dogs, cats, and cattle account for approximately 3 percent of the reported rabies cases (City and County of San Francisco 2010, 1). In San Francisco, all animal rabies cases in the past 60 years occurred in bats, recently at a rate of one to five confirmed cases per year from 2004 through 2009 (City and County of San Francisco 2010, 1). Studies by Riley et al. show that proximity to urban areas (which describes the situation for wildlife in GGNRA lands) or contact with humans and their pets can increase the risk of disease exposure for wild carnivore populations (e.g., canine parvovirus in foxes and feline calicivirus in bobcats) (Riley et al. 2004, 12, 18). However, the collection of dog waste and reducing feral and unaccompanied domestic animals in parks could help reduce the risk of transmission of many diseases (Riley et al. 2004, 19).

Conclusion

In summary, peer-reviewed literature has documented disturbance to wildlife species as a result of domestic dogs in recreational/park settings (Burger et al. 2004, 287; Davidson and Rothwell 1993, 101; George and Crooks 2006, 14; Kirby et al. 1993, 55; Lafferty et al. 2006, 2222; Lenth et al. 2008, 223; Miller et al. 2001, 131; Smit and Visser 1993, 10; Thomas et al. 2003, 69; Yalden and Yalden 1990, 249). Each of the wildlife species discussed in detail above, including shorebirds, landbirds (songbirds), land mammals, and marine mammals have different threshold responses to disturbance (Pfister et al. 1992, 118). Management actions such as closing or limiting areas to people and/or dogs have been suggested to reduce disturbance to wildlife species as demonstrated in studies discussed above (Banks and Bryant 2007, 2; George and Crooks 2006, 14; Lafferty et al. 2006, 2224; Miller et al. 2001, 131; Reed and Merenlender 2011, 513). Similarly, management actions such as enforcing or requiring leash laws have also been suggested to reduce impacts to wildlife as a result of domestic dogs (Burger et al. 2004, 287; Lenth et al. 2008, 223; Miller et al. 2001, 131; Thomas et al. 2003, 71). Because recreational activities that occur on trails can be defined as frequent and spatially predictable, animals may habituate to these activities, though some more sensitive species may not. However, off-trail recreation can be both infrequent and unpredictable; animals are not accustomed to activity in these areas, resulting in a greater area of influence, flush distance, and distance moved (Miller et al. 2001, 130). Specifically, the spatial behavior of off-leash dogs is unpredictable; and when dogs wander off trails, they are more likely to elicit flushing responses (Miller et al. 2001, 130; Lenth et al. 2008, 223). Some studies have shown that “local wildlife does not become habituated to continued disturbance” by dogs (Banks and Bryant 2007, 612).

When compliance is assumed, management alternatives that would prohibit dogs from accessing wildlife habitats would eliminate disturbance to wildlife from dogs chasing after wildlife and barking at wildlife, as well as potential direct or indirect mortality as a result of dog/wildlife encounters. Prohibiting dogs from areas also prevents habitat degradation and loss of species that are sensitive to the presence of dogs. On-leash dog walking restrictions would physically restrain dogs, reducing direct impacts on wildlife and wildlife habitat, and should also eliminate any potential chasing after wildlife. Additionally, dog waste, nutrient addition, trampling, digging, or spread of invasive species would either be reduced or eliminated if dogs were prohibited or leashed in certain areas. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. On-leash dog walking restrictions would physically restrain dogs, which would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and by lunging/barking at roosting, resting, and feeding birds. This could cause birds to flee or relocate, using energy reserves unnecessarily, and could result in the loss of preferred habitat. Disease transmission that results from direct contact between dogs and wildlife, especially canids such as coyotes, would also be reduced but not necessarily eliminated as a result of dog waste removal requirements in this final plan/EIS. Management alternatives requiring on-leash dog walking on beaches would still result in impacts as a result of disturbance to resting and feeding shorebirds, waterfowl, and stranded marine mammals. Proposed VSCAs would result in the loss of habitat for wildlife species and may result in the temporary or permanent displacement of wildlife species from those areas. The VSCA may also lead to avoidance of the surrounding area by wildlife due to the concentration of dogs and noise, as well as the elevated amount of dog waste and scent marking. However, the concentration of off-leash dog use in a VSCA would reduce the likelihood of off-leash dogs disturbing wildlife or wildlife habitat outside of VSCAs when compliance is assumed.

VEGETATION AND SOILS

As stated in chapter 3, GGNRA supports a rich assemblage of plants in the parks' grasslands, coastal scrub, wetlands, and forests that compose the coastal ecosystem. Approximately 80 vegetation alliances (or plant communities) have been documented at GGNRA. These alliances were then grouped into general vegetation communities at GGNRA for the purposes of analysis. In this section, impacts on these identified natural vegetation communities are analyzed for each alternative presented. The impact analysis described in this section also includes plant species of interest or management concern. Species of interest include plants that are not federally or state listed, but have status or ranking through the California Native Plant Society (CNPS). The NPS conducts its actions in a manner consistent with relevant state laws and regulations. As a result, this section analyzes impacts on plant species included on lists produced by the CNPS. Impacts on plant species that are federally or state listed as threatened, endangered, or candidate species are described in the section "Special-status Species." Because soils have been dismissed as a stand-alone section in this document, discussions of soil types and impacts resulting from soil compaction and subsequent changes to soils are included in this vegetation section of chapter 4.

This "Vegetation and Soils" section also provides an overview of the guiding policies and regulations, describes the study area, includes a definition of duration, details the assessment methodology, and defines the impact thresholds for vegetation as well as soils.

GUIDING POLICIES AND REGULATIONS

NPS Natural Resource Policies and Guidelines

The NPS has developed specific guidelines for the management of natural resources (NPS 2006a). The guidelines provide for the management of native and non-native plant (and animal) species. They are designed to assist parks in developing resource management plans and action plans for specific park programs in all park management zones: natural, cultural, park development, and special use zones as described in the NPS *Management Policies 2006* (NPS 2006a) and articulated in each park's general management plan (GMP).

The NPS *Management Policies 2006* state that the NPS "will maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems. The term "plants and animals" refers to all five of the commonly recognized kingdoms of living things and includes such groups as flowering plants, ferns, mosses, lichens, algae, fungi, bacteria, mammals, birds, reptiles, amphibians, fishes, insects, worms, crustaceans, and microscopic plants or animals." The NPS will achieve this by:

- preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations and the communities and ecosystems in which they occur;
- restoring native plant and animal populations in parks when they have been extirpated by past human caused actions; and
- minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them (NPS 2006a, Section 4.1).

Management Policies 2006 also states that the NPS "will inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species to the greatest extent possible. In addition, the "Service will inventory other native species that are of special management concern to parks (such as rare, declining, sensitive, or unique species and their habitats) and will manage them to maintain their natural distribution and abundance" (NPS 2006a, Section 4.4.2.3).

NPS *Management Policies 2006* requires the NPS "to understand and preserve the soil resources of parks, and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil or its contamination of other resources." "Management action will be taken by superintendents to prevent or at least minimize adverse, potentially irreversible impacts on soil" (NPS 2006a, Section 4.8.2.4, 56).

Additionally, the *Organic Act* of 1916 (54 USC 1001(a), 100301 et seq.) directs national parks to conserve wildlife unimpaired for future generations and is interpreted to mean that native animal life is to be protected and perpetuated as part of a park unit's natural ecosystem. Parks rely on natural processes to control populations of native species to the greatest extent possible; otherwise, they are protected from harvest, harassment, or harm by human activities.

Species Designations

As described in chapter 3, other species of interest at GGNRA include plants that are not federally or state listed but have status or ranking through either the Department of Fish and Wildlife or the CNPS. The impact analysis for these plant species considered as other species of interest is included in this "Vegetation" section. Federally and state-listed plant species are discussed in detail in the "Special-status Species" section. These species all require consideration by the NPS when management actions are taken to ensure that actions do not harm the species or their habitats.

California Native Plant Society. The CNPS maintains a list of species in California that are considered rare or endangered according to CNPS criteria. The list contains plants of special concern in California, including species, subspecies, or varieties that are considered to be extinct (list 1A); species that are rare, threatened, or endangered in California and elsewhere (list 1B); species that are rare, threatened, or endangered in California but are more common elsewhere (list 2); species that are potentially endangered but additional information on rarity and endangerment is needed (list 3); and species that have a limited distribution, but are not currently endangered (list 4).

California Department of Fish and Wildlife. The Department of Fish and Wildlife maintains an informal list of native plant and wildlife species of special concern because of population declines and restricted distributions, and/or because they are associated with habitats that are declining in California. The Department of Fish and Wildlife considers all plants listed by the CNPS as "special plants" and recommends that impacts on plants on lists 1 and 2 be considered during project analysis. Legal protection is afforded to plant species listed under the California *Endangered Species Act* (ESA) by the Fish and Game Commission of the Department of Fish and Wildlife.

STUDY AREA

The geographic study area for vegetation and soils includes the individual sites of GGNRA under consideration for the dog management plan/EIS that could be impacted by dog management activities including new lands. There are 22 individual sites relevant to this project, which have been previously described in detail in chapter 3. Not all communities present at GGNRA would be affected by this project; therefore, this section only analyzes impacts on the vegetation, soil, and plant communities at GGNRA affected by dog management activities.

DURATION OF IMPACT

Duration describes the length of time an effect would occur, either short term or long term. Long term impacts to vegetation and soils are described as those persisting for the life of the plan/EIS (the next 20 years). After the implementation of the plan, a 1- to 3-month period of public education would occur to implement the proposed action followed by a 1- to 3-month period testing the monitoring-based management program. At the beginning of the education and enforcement period, short-term impacts on all natural resources would occur, regardless of the alternative chosen. During this period, impacts on vegetation and soils would be similar to the current conditions and would be short-term. Following the education period, monitoring for noncompliance and impacts to resources would begin, and it is expected that compliance with the dog walking regulations and associated adverse impacts would improve gradually and the impacts on vegetation and soils would then become long term, as described below for each alternative.

ASSESSMENT METHODOLOGY

Maps showing vegetation cover in GGNRA and consultations with NPS staff were used to identify baseline conditions in the study area, along with available information on the condition and composition of the vegetation in the park. The analysis of vegetation considered that changes in the plant community size, integrity, or continuity could occur as a result of the implementation of various management activities.

Overall, impacts on vegetation were analyzed qualitatively, and as a result, acreages of impacts on specific types of vegetation were not completed as part of this project. The information in this analysis was obtained through best professional judgment of park staff and experts in the field, as well as supporting literature (as cited in the text). Data on frequency of disturbance of closed areas (specific

habitat types, such as creeks, lagoons, and cliffs) in a particular park site, if available, have been incorporated with relevant scientific literature to predict the impact of dog management activities on vegetation. Where data on the frequency of disturbance are not available, information from park staff and visitors on the relative intensity of use by visitors and the relative number of dogs both on and off leash has been used to predict impacts.

In addition to vegetation, this analysis considers the changes in rates of erosion, soil composition, or soil function that would occur as a result of the implementation of the various management activities. The analysis of soils began with the existing condition of the soil. Natural soil function has been lost in areas that have been converted to urban uses or compacted by use (e.g., parking lots, picnic areas, and trails). Impacts on soil resources as a result of dogs were analyzed qualitatively due to a lack of site-specific scientific data regarding the effects of dogs on soils at GGNRA. Best professional judgment, from experts in the field and at the park, and other supporting literature (as cited in the text) were used in determining impact categories.

VEGETATION AND SOIL IMPACT THRESHOLDS

Vegetation impacts were determined by examining the potential effects of dog walking activities on the plant community, including plant structure and abundance as well as distribution, quality, and quantity of the habitat in a park site. Soil impacts were determined by examining the potential effects of dog walking activities on soils or soil function, as well as distribution, quality, and quantity of soils within a park site. For the action alternatives, on-leash dog walking impacts were based on an allowed 6-foot dog leash. Since dog walkers may walk along the edge of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in a LOD area for vegetation that would extend 6 feet out from the edges of the fire road or trails. In VSCAs, the guidelines require that dogs under voice and sight control must stay within the boundaries of the VSCA, limiting the LOD to the VSCA itself. The intensity of each adverse impact is judged as having a minor, moderate, or major effect. Negligible impacts are neither adverse or beneficial, nor long term nor short term. A beneficial impact would be a positive change in the condition or appearance of the resource. No impact on vegetation or soils may also be applicable for some alternatives and sites if dogs are prohibited. The following impact thresholds were established to describe the effects on vegetation and soils under the various alternatives being considered.

Beneficial A beneficial impact is a beneficial change from the current conditions and is a relative indicator of progress compared to the no-action alternative. In general, a beneficial impact to vegetation would include an increase in the abundance as well as distribution, quality, and quantity of the vegetation. For soils, a beneficial impact would include increases to the natural soil function or soil/geologic composition, or a decrease in soil erosion.

Negligible Impacts to vegetation would result in no measurable or perceptible changes in the plant community, including plant structure and abundance as well as distribution, quality, and quantity of the habitat in a park site. For soils, impacts would be at such low levels of detection that there would be no discernible effect on soils or soil function. Negligible is also appropriate at park sites where natural soil function or vegetation has been converted previously due to development or use (parking lots, roads, compacted trails, picnic areas, lawn areas).

Adverse **Minor**. Effects would be measurable and perceptible, but would be localized in a relatively small area. The overall integrity of the plant community, including plant structure and abundance as well as distribution, quality, and quantity of the habitat in a park site, would not be affected and, if left alone, would recover. For soils, impacts would be detectable, but they would not be large enough to cause changes in soils or soil function at a park site.

Moderate. Effects would be measurable and perceptible over a relatively large area, and would affect the overall integrity of a plant community, including plant structure and abundance as well as distribution, quality, and quantity of the habitat. For soils, impacts would be long term and readily apparent, and cause noticeable changes in soils or soil function at a park site.

Major. Effects would be readily apparent over the majority of the study area and would affect the integrity of the plant community, including plant structure and abundance as well as distribution, quality, and quantity of the habitat. Impacts to soils or soil function at a park site would be substantial, highly noticeable, and permanent.

Detailed Description of Impact Analysis

At GGNRA, the management of vegetation is primarily focused on research, monitoring, and actively restoring habitat for threatened, endangered, and unique plant species. Restoration efforts at GGNRA have included decompacting soils, removing non-native and invasive plant species, and planting listed and unique plant species. At GGNRA, for properties recently acquired or soon to be acquired by the park (Cattle Hill and Rancho Corral de Tierra), detailed inventorying of vegetation, including listed plant species, is currently ongoing. Therefore, mapped occurrences as well as potential habitat are identified at these sites because site-specific data collection was still occurring at the time of publication.

CUMULATIVE SOIL AND VEGETATION IMPACTS COMMON TO ALL ALTERNATIVES

Urban development and loss of habitat continuity, as well as the establishment and overall dominance of areas by non-native and/or invasive plant species, are the primary past actions that have influenced vegetation at the sites in GGNRA in this study area. In addition, fire suppression efforts beginning in 1870 and extending into recent years have resulted in a twofold increase in oak pollen and oak density, perhaps facilitating the spread and effect of the non-native sudden oak death pathogen (NPS 2005b, 321) and allowing the unnatural buildup of both dead and live fuels. The use of fire may help manage both the forest structure and potentially stall or inhibit the effects of sudden oak death; recent studies suggest fire can be used to manage the spread of sudden oak death, and may kill off fungal spores (NPS 2005b, 197).

Prior to the park's establishment, urban development and related activities immediately adjacent to park boundaries has contributed to changes in composition and density of key species. For example, coastal redwood forest is estimated to have covered 1.98 million acres across its range 200 years ago. Today, approximately 85,000 acres (4 percent) are left. Monterey pine, Monterey cypress, and eucalyptus have all been imported by European-American settlers for lumber or other purposes and, as non-native species, have competed with and replaced native species, resulting in altered vegetation communities inside and outside GGNRA. Conversion of land to impervious surfaces has increased soil erosion, and overuse of areas has increased soil compaction; both erosion and compaction have resulted in further loss of native vegetation communities from altered soil characteristics and direct loss of soils. Disturbed areas provide opportunities for colonization by non-native invasive plant species. Coastal scrub habitat is present over

about 15 percent of its former range in California, primarily because of land conversion to agricultural, industrial, and residential development. Grasslands in California have been invaded by non-native species in part because non-native plant species are better adapted to areas grazed by the livestock that have displaced the native tule elk, as well as areas disturbed by clearing and plowing for agriculture. Highly invasive species that occur in grasslands and coastal scrub in the park, such as Scotch and French broom, are escaped ornamental shrubs brought from Europe, and most of the park's non-native grasses are imported from Eurasia. All are adapted to the area's Mediterranean climate (NPS 2005b).

In addition to urban development outside and adjacent to GGNRA sites, actions such as the establishment of "social trails" made by dogs and humans traversing park sites off official trails can result in GGNRA sites becoming fragmented into islands of intact habitat surrounded by infrastructure and associated non-native species. Populations of plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival. It then becomes imperative for the NPS to provide protection to remaining habitat and ensure that the quality of habitats in GGNRA is maintained.

Throughout GGNRA, the NPS and groups such as the Golden Gate National Parks Conservancy are attempting to reduce the impacts of prior and adjacent development, fire suppression, erosion, and soil damage through a variety of management projects that will benefit native vegetation communities and special-status plant species. Restored and revitalized vegetation communities in GGNRA will, in turn, provide additional improved habitat for wildlife. Completed, current, and future project activities that would have a beneficial cumulative impact on vegetation in the GGNRA sites discussed in this final plan/EIS include the following:

- The GGNRA GMP, which provides for resource protection in the park.
- The GGNRA *Fire Management Plan*, which provides guidance for the protection of natural resources through the use of prescribed burns, fire protection measures, and the reduction of fuel hazards.
- Native plant habitat restoration projects that occur throughout the park and are conducted through park stewardship programs led by GGNRA Natural Resources staff (Habitat Restoration Team), the Presidio Park Stewards, and the Golden Gate National Parks Conservancy site stewardship programs. These projects include invasive species removal and/or native plant restoration projects to restore and enhance natural terrestrial plant communities in GGNRA and will beneficially affect coastal vegetation communities at GGNRA. Since 2003, the Conservancy site stewardship programs have worked with the NPS to control invasive plant species and restore natural plant species throughout the park, resulting in the restoration or enhancement of over 1,000 acres of trailside habitat in sites such as the Marin Headlands Trails and Lands End.
- The NPS inventory and monitoring program aims to improve park management through greater reliance on scientific knowledge, including collecting, organizing, and making available natural resource data, such as invasive plant species. Specifically, the inventory and monitoring program includes early detection of invasive plant species, described as a protocol to help find and map the most invasive plant species as they enter sensitive areas of the park to protect the most critical places.
- The *Mori Point Restoration and Trail Plan*, which restored the ecological integrity of existing habitats and restored native plant communities.
- Restoration of native vegetation as part of the *Lower Easkoot Creek Restoration Plan*.

- The *Wetland and Creek Restoration at Big Lagoon, Muir Beach, Marin County* project, restored riparian habitat; installed fencing to protect wetland plant communities; created habitat for threatened and endangered species like coho salmon, steelhead trout, and California red-legged frogs.
- Fencing installed at Rodeo Beach as part of the *Marin Headlands Trails/Fort Baker Improvement and Transportation Management Plan/EIS*, which protects sensitive coastal dune and wetland communities.

In addition to the GGNRA-sponsored projects discussed above, the SNRAMP will also be included in the cumulative impacts analysis. Fragments of unique plant and animal habitats within San Francisco and Pacifica, known as Significant Natural Resource Areas (natural areas), have been preserved within the parks that are managed by the San Francisco Recreation and Park Department (SFRPD). The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years (SFPD 2011, 1). The scope of the SNRAMP analysis includes natural areas managed by the SFRPD in San Francisco and Pacifica and addresses dog walking (including on-leash dog walking and off-leash DPAs) in these areas (SFPD 2011, 261-262). The SNRAMP will protect natural resources, but will affect recreation resources.

The SNRAMP would have an overall beneficial impact on biological resources over the long term. Habitat types within the natural areas include grassland, wetland, coastal scrub, dune scrub, riparian, and native forest, as well as numerous areas of non-native vegetation (SFPD 2011, 285). The natural areas provide a mosaic of habitats that are accessible to mobile wildlife species, particularly birds, including foraging, nesting, and roosting habitats (SFPD 2011, 290). Project activities included in the SNRAMP would protect and enhance special-status species habitat, riparian habitat, wetlands, migratory wildlife habitat, nursery sites, and other sensitive habitats in the natural areas (SFPD 2011, 292), and would include the following:

- Maintain viable populations of all special-status species;
- Maintain and enhance native plant and animal communities;
- Maintain and enhance local biodiversity;
- Reestablish native community diversity, structure, and ecosystem function where degraded;
- Improve natural area connectivity; and
- Decrease the extent of invasive exotic species cover.

The San Francisco Recreation and Park Department's dog policy excludes dogs (on- and off-leash) from sensitive habitat areas, such as sensitive wildlife areas (e.g., breeding habitat for birds), sensitive remnant native plant communities (e.g., wetlands), sensitive plant populations (e.g., locally rare wildflower species), and high erosion prone areas, and excludes them temporarily from restoration areas (SFPD 2011, 156). The SNRAMP, authored by the San Francisco Planning Department will guide natural resource protection and habitat restoration, among other activities over the next 20 years in natural areas of San Francisco and Pacifica managed by SFRPD (SFPD 2011, 1). The scope of the SNRAMP analysis includes natural areas managed by the SFRPD in San Francisco and Pacifica and addresses dog walking (including on-leash dog walking and off-leash DPAs) in these areas (SFPD 2011, 261-262), including:

- "Limit off-leash activities to the relatively flat areas to avoid sensitive plant species" (SFPD 2011, 118).

- "Monitor the dog impact on wetlands and [creeks] and consider appropriate restrictions (including fencing) to keep dogs out of the creek channel and wetlands" (SFPD 2011, 127).
- "Install and maintain signs and barriers to prevent disturbance of sensitive habitat in Horse Stable Pond and Laguna Salada by dogs or other possible nuisances" (SFPD 2011, 144).
- "Make 33.3 acres of Arrowhead Pond, Laguna Salada, and Horse Stable Pond off limits to dogs to prevent access to sensitive habitats; if this is not effective, use fencing to close social trails in these areas" (SFPD 2011, 145).

The combined reductions in off leash areas proposed by both the SNRAMP and this final plan/EIS could result in an increase in dog use at the remaining natural areas managed by SFRPD as well as GGNRA sites. An increase in dog use at the natural areas could accelerate the physical deterioration of those DPAs and the natural areas in general. DPAs within the natural areas would continue to be evaluated in accordance with the SFRPD's Dog Policy; the SFRPD would monitor DPAs for their effects on the natural areas and develop solutions to any identified issues. In this section, the SNRAMP will be discussed as a project with cumulative impacts for GGNRA sites within San Francisco that have coastal scrub/chaparral/grassland vegetation, riparian vegetation, and wetland vegetation. Once implemented, the SNRAMP would improve plant communities and would have an overall beneficial impact on vegetation over the long term.

Adverse impacts could occur as a result of development projects both in the park and adjacent to park boundaries, including the various transportation and trail plans, such as the *Marin Headlands Trails and Fort Baker Transportation Infrastructure and Management Plan Final Environmental Impact Statement*. These efforts will involve ground-disturbance activities that could add to or exacerbate existing non-native plant problems along road and trail corridors. However, ongoing efforts to identify mitigation measures for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would reduce the potential for these types of impacts. These projects would have a beneficial impact on vegetation as a whole (NPS 2005b). Projects would also focus on the elimination of excess or unofficial social trails, reducing habitat fragmentation and associated infiltration of weed species into intact habitat areas.

The following paragraphs describe impacts on vegetation by habitat type, alternative, and applicable site.

IMPACTS TO COASTAL COMMUNITIES BY SITE AND ALTERNATIVE

The coastal communities at GGNRA include habitats such as coastal dunes, beaches, adjacent open water, and rocky intertidal areas, of which only the coastal dune habitat supports terrestrial plant communities that could be affected by dog activities. In the study area at GGNRA, coastal dune habitat is found at Stinson Beach, Muir Beach, Rodeo Beach/South Rodeo Beach, Crissy Field, Baker Beach and Bluffs to Golden Gate Bridge, Ocean Beach, and Fort Funston. Coastal dune plant species are very sensitive and easily disturbed by trampling, digging (from off-leash dogs), and other activities, and may not recover due to their sensitive nature, which may create opportunities for the establishment of non-native and/or invasive plant species. CNPS-listed plant species at GGNRA that occur in coastal dune habitat are included in the impacts analysis of this section as applicable.

The following areas in the dog management planning areas at GGNRA have beach habitat: Muir Beach, Rodeo Beach/South Rodeo Beach, Crissy Field, Baker Beach and Bluffs to Golden Gate Bridge, Ocean Beach, Fort Funston, and Mori Point; dogs are currently allowed access to these beaches or portions of these beaches. As applicable, these beach areas are discussed in more detail in the following paragraphs. Many of the coastal sites in GGNRA have rocky intertidal areas and cliffs, including Muir Beach, Rodeo Beach, Fort Baker, Fort Mason, Baker Beach and Bluffs to Golden Gate Bridge, Lands End, Fort

Funston, and Mori Point. However, these areas are not the dominant habitat type at the site or are generally not accessible to visitors therefore, are not discussed further in this final plan/EIS.

MARIN COUNTY SITES

Stinson Beach

Alternative A: No Action. Under current conditions at Stinson Beach, dogs and dog owners are restricted to having dogs on leash in the parking lot and picnic areas since dogs are not allowed on the beach because it is a swimming beach. Compliance is considered good in the parking lots and picnic areas, with only 40 off-leash violations recorded over 9 years (tables 12a and 12b). The integrity of the plant community is already affected by human use. In general, the dune communities are not in areas where dogs are allowed on leash under alternative A, and the majority of vegetation that could be affected by dogs on dunes (at the north parking lot) is non-native vegetation. However, visitors (both humans and dogs) currently access the adjacent county beach, Upton Beach, where dogs are allowed from the north end of Stinson. This access point to Upton Beach from the north Stinson Beach parking lot is located within coastal dune communities and dune erosion is currently occurring along the northern end of the parking lot, resulting in seasonal flooding of adjacent properties and the parking lot. Therefore, a long-term minor adverse impact would occur to the coastal community as a result of continued use of the area to access Upton Beach by visitors of all kinds.

Under alternative A, no permit system exists for dog walking. At Stinson Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on the coastal foredune plant community.

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on coastal dune vegetation at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to coastal vegetation communities by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect habitat at GGNRA park sites such as Stinson Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Stinson Beach. The *Lower Easkoot Creek Restoration Project* at Stinson Beach has restored native vegetation (NPS n.d.d). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project*, located near Stinson Beach, in partnership with Marin County Open Space District and the U.S. Army Corps of Engineers (GFNMS Working Group 2008). This project will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed.

The GGNRA interim compendium amendment requires commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Stinson Beach is uncommon and all dog walking at the site is on leash. However, the interim compendium amendment would have a slight beneficial effect on coastal communities by limiting the

number of dogs commercial dog walkers could have at the site at one time, thus reducing trampling and dune erosion.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Stinson Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term minor adverse impacts from dogs at Stinson Beach on coastal dune vegetation under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs and the interim permitting program combined with the negligible impacts from any development or construction actions and the long-term minor adverse impacts on coastal dune vegetation from alternative A would result in negligible cumulative impacts on coastal dune vegetation.

STINSON BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Dune communities are generally not in areas where dogs would be allowed on leash and the majority of vegetation on the dunes is non-native species where dogs can affect dunes; however, dogs are allowed on the path to Upton Beach which may cause continued dune erosion in this area	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. As in alternative A, on-leash dog walking would be allowed only in the parking lot and picnic areas of Stinson Beach. Dogs would not be allowed on the beach itself, because it is a designated swimming beach. Assuming compliance, alternative B would produce no impact on coastal dunes at Stinson Beach because dune communities are not in areas where dogs would be allowed.

Since dune communities are not in areas where dogs would be allowed there would be no impact on coastal dunes at Stinson Beach from commercial dog walkers.

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on coastal dune vegetation at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to coastal vegetation communities by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and

enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect habitat at GGNRA park sites such as Stinson Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Stinson Beach. The *Lower Easkoot Creek Restoration Project* at Stinson Beach has restored native vegetation (NPS n.d.d). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project*, located near Stinson Beach, in partnership with Marin County Open Space District and the U.S. Army Corps of Engineers (GFNMS Working Group 2008). This project will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Stinson Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The lack of impacts on coastal dune vegetation from dogs at Stinson Beach under alternative B was considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs combined with the negligible impacts from any development or construction actions and the lack of impacts from alternative B would result in beneficial cumulative impacts on coastal dune vegetation.

STINSON BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would not be allowed on the beach or trails	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C dog walking restrictions for Stinson Beach would be the same as alternative B; therefore, there would be no impact on coastal dune communities under alternative C, assuming compliance.

Since dune communities are not in areas where dogs would be allowed there would be no impact on coastal dunes at Stinson Beach from commercial dog walkers.

Cumulative Impacts. Under alternative C, the cumulative impacts would be the same as those under alternative B: beneficial cumulative impacts on coastal dunes at this park site.

STINSON BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would not be allowed on the beach or trails	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at this site. Assuming compliance, no impact on vegetation from dogs would occur at this site because dog walking would be eliminated from the site.

Since dogs would not be allowed at Stinson Beach, there would be no impact from commercial dog walkers on the coastal community vegetation.

Cumulative Impacts. The lack of impacts on coastal dune vegetation from dogs at Stinson Beach under alternative D was considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs combined with the negligible impacts from any development or construction actions and the lack of impacts on coastal dune vegetation from alternative D would result in beneficial cumulative impacts on coastal dune vegetation.

STINSON BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts on vegetation would be the same, assuming compliance: no impact.

Since dune communities are not in areas where dogs would be allowed there would be no impact on coastal dunes at Stinson Beach from commercial dog walkers.

Cumulative Impacts. Under alternative E, the cumulative impacts on vegetation at this park site would be the same as those under alternative B: beneficial cumulative impacts.

STINSON BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited on the beach or trails	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking in the parking lots and northern and central picnic areas of Stinson Beach and on the path to Upton Beach from the north parking lot. Dogs would not be allowed on the beach itself because it is a designated swimming beach, and dogs would be restricted from the southern picnic area to maintain a dog-free area for visitors. The on-leash path or corridor to be built from the north parking lot of Stinson Beach would provide legal access to Upton Beach, the Marin County-managed beach where dog walking is allowed. This access trail would include fencing or a barrier to separate this trail from the GGNRA beach where dogs are prohibited. This proposed path is located within coastal dune communities and dune erosion is currently occurring at the northern end of the parking lot, resulting in flooding of adjacent properties and the parking lot. Therefore, a long-term minor adverse impact would occur to the coastal community as a result of formalized access to Upton Beach by visitors of all kinds (both humans and dogs). However, the

park would determine the most appropriate location for the access route to reduce the potential for added dune erosion at this location and would consider restoration of the dunes in this area in the future. At Stinson Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on the coastal foredune plant community.

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or will have the potential to have effects on coastal dune vegetation at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to coastal vegetation communities by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect habitat at GGNRA park sites such as Stinson Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Stinson Beach. The *Lower Easkoot Creek Restoration Project* at Stinson Beach has restored native vegetation (NPS n.d.d, 1). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project*, located near Stinson Beach, in partnership with Marin County Open Space District and the U.S. Army Corps of Engineers (GFNMS Working Group 2008). This project will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Stinson Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term minor adverse impacts on coastal dune vegetation from dogs at Stinson Beach under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs combined with the negligible impacts from any development or construction actions and the long-term minor adverse impacts on coastal dune vegetation from the preferred alternative would result in negligible cumulative impacts on coastal dune vegetation.

STINSON BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Dogs would be prohibited on the beach or trails but would be allowed on the path to Upton Beach which may cause further dune erosion	No change, assuming compliance	Negligible cumulative impacts

Muir Beach

Alternative A: No Action. At Muir Beach, dune communities, including a dune restoration area, are located adjacent to the beach, which is open to dogs under voice control. This site has moderate to high visitor use and a total of 42 dog-related violations were reported from 2008 through 2016 (tables 15a and 15b). The most common violation was for having a dog off-leash (19 violations over 9 years) (tables 15a and 15b). The dune communities at Muir Beach are not well protected. Ineffective post-and-cable fencing at Muir Beach discourages visitors from entering the dune restoration area; other dune areas are unfenced and would not physically exclude dogs. As a result, alternative A would have continued long-term moderate adverse impacts on coastal dune plant species because the integrity of the plant community could be negatively affected by dogs through trampling, digging, and dog waste.

Under alternative A, no permit system exists for dog walking. At Muir Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on dune communities.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain as well as expanding riparian vegetation at the Banducci site (NPS 2010b). The *Dias Ridge Restoration and Trail Improvement Project* realigned trail segments and restored degraded areas on Dias Ridge above Muir Beach (NPS 2016). Additional vegetation benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way. The *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project has restored and enhanced ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2007b; NPS 2009j). The park stewardship programs initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants, such as pampas grass, to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010a). The Pirates Cove project disturbed a large area of soil and vegetation and resulted in a short-term adverse impact, but these impacts were offset by the long-term, beneficial impacts on soils and vegetation resources.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Muir Beach is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal communities at Muir Beach by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing trampling, digging, and dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Muir beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term moderate adverse impacts on the coastal dune plant community from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the many habitat restoration projects at and near Muir Beach and the interim permitting program should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be negligible to long term, minor, and adverse.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Dune communities are not well protected, are adjacent to off-leash areas, and are subject to impacts by dogs through trampling, digging, and dog waste	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking in the parking area, the Muir Beach Trail including the pedestrian bridge, the portion of Kaashi Way from the bridge to the beach, and the beach. The dune communities located adjacent to Muir Beach would be generally protected by physically restraining dogs. Coastal dune vegetation located in the 6-foot area adjacent to the beach (LOD area) would receive long-term minor adverse impacts from dogs trampling vegetated areas; nutrient addition from dog waste would also occur.

The long-term minor adverse impacts from dogs on the trails and in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs would protect vegetation and habitat off trail. Therefore, the overall impact on vegetation under alternative B would be negligible because no measurable or perceptible changes in the dune plant community would occur; plant structure, abundance, and distribution (both quality and quantity) of the coastal community would not measurably change.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain as well as expanding riparian vegetation at the Banducci site (NPS 2010b). The *Dias Ridge Restoration and Trail Improvement Project* realigned trail segments and restored degraded areas on Dias

Ridge above Muir Beach (NPS 2016). Additional vegetation benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way. The *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project has restored and enhanced ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2007b; NPS 2009j). The park stewardship programs initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants, such as pampas grass, to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010a). The Pirates Cove project disturbed a large area of soil and vegetation and resulted in a short-term adverse impact, but these impacts were offset by the long-term, beneficial impacts on soils and vegetation resources.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Muir beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the coastal dune plant community from dogs at Muir Beach under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the many habitat restoration projects at and near Muir Beach combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the coastal dune plant community would result in beneficial cumulative impacts.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Because alternative C would have the same dog walking restrictions as alternative B, the impacts on dune communities would also be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the sites where permits would be issued allowing individual or commercial dog walkers to walk more than three dogs. Impacts to the coastal dunes by commercial dog walkers would be prevented by requiring dogs to be on a leash, resulting in no impact on vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on vegetation at this park site would be the same as those under alternative B: beneficial cumulative impacts.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. In the vicinity of Muir Beach, alternative D would allow on-leash dog walking in the parking area and on the Muir Beach Trail adjacent the parking lot. The pedestrian bridge to the beach and the beach itself would be closed to dogs; the tidal lagoon and Redwood Creek, which are currently closed to dogs, would remain so. Assuming compliance, no impact on vegetation (in or beyond LOD area) would occur as a result of alternative D because trampling and nutrient addition in coastal dunes would be prevented by on-leash dog walking since dogs would not be allowed on the beach, the pedestrian bridge, or path near dune communities.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on coastal dune vegetation.

Cumulative Impacts. Under alternative D, the lack of impacts on the coastal dune plant community from dogs was considered together with the effects of the projects mentioned above under alternative B "Cumulative Impacts." The beneficial effects from the many habitat restoration projects at and near Muir Beach combined with the negligible impacts from any development or construction actions and the lack of impacts from this alternative on the coastal dune plant community would result in beneficial cumulative impacts.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would not be allowed on the beach or boardwalk/path near dune communities	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. In the vicinity of Muir Beach, the parking area, the Muir Beach Trail, the pedestrian bridge, and the portion of Kaashi Way from the bridge to the beach would be open to on-leash dog walking. The portion of Muir Beach south of Kaashi Way would be a designated VSCA open to dogs under voice and sight control. Dogs would be prohibited on the remainder of the beach north of Kaashi Way. The VSCA designated as part of this alternative is located immediately adjacent to the fenced dune restoration area. The dunes would not be able to expand naturally beyond the fencing because of dog use, due to continued trampling and dog waste. The impacts in the LOD area and the VSCA would be long term, moderate, and adverse because the effects would be measurable and perceptible over a relatively large area and would affect the overall integrity of a plant community.

The long-term moderate adverse impacts in the VSCA and the LOD area would occur in a relatively small area compared to the site as a whole, and physically restraining dogs would protect dune vegetation, including the restored dunes. However, the dunes would not be able to expand naturally because the

VSCA would be located immediately adjacent to the fenced dune restoration area. Therefore, the overall impact on dune vegetation under alternative E would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not an area where permits for walking more than three dogs would be issued, so individual and commercial dog walkers would only be allowed to walk a maximum of three dogs either on leash or under voice and sight control per person. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. The long-term minor adverse impacts on coastal dune communities from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the many habitat restoration projects at and near Muir Beach should reduce the adverse impacts from this alternative to the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be negligible.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; dunes would not be able to expand naturally	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the parking area, the Muir Beach Trail including the pedestrian bridge, the beach, and Kaashi Way from the beach to Pacific Way. Fencing would be installed along the dunes, the lagoon, and Kaashi Way as needed to protect resources. The tidal lagoon and Redwood Creek, which are currently closed to dogs, would remain so. Assuming compliance, no impact on vegetation (in or beyond LOD area) would occur to coastal communities as a result of the preferred alternative because trampling, digging, and nutrient addition in coastal dunes would be prevented by on-leash dog walking since off-leash dogs would not be allowed on the beach, the bridge, or path near dune communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not an area where permits for walking more than three dogs would be issued, so individual and commercial dog walkers would only be allowed to walk a maximum of three dogs on leash per person. However, impacts to the coastal dunes by commercial dog walkers would be prevented by the requirement, resulting in no impact on vegetation.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing

operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain, as well as expanding riparian vegetation at the Banducci site (NPS 2010b, 1). The *Dias Ridge Restoration and Trail Improvement Project* realigned trail segments and restored degraded areas on Dias Ridge above Muir Beach (NPS 2009i, 1). Additional vegetation benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way. The *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project restored and enhanced ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009j, 1). The park stewardship programs initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants, such as pampas grass, to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010a, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Muir Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The lack of impacts on the coastal dune plant community from dogs at Muir Beach under the preferred alternative was considered together with the effects of the projects mentioned above. The beneficial effects from the many habitat restoration projects at and near Muir Beach combined with the negligible impacts from any development or construction actions and the lack of impacts from this alternative on the coastal dune plant community would result in beneficial cumulative impacts.

MUIR BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Physical restraint of dogs would protect dune vegetation; trails and the LOD area are a small portion of the entire site	Beneficial, assuming compliance	Beneficial cumulative impacts

Rodeo Beach/South Rodeo Beach

Alternative A: No Action. Under current conditions, dogs are allowed under voice control on Rodeo Beach and South Rodeo Beach. On-leash dog walking is allowed on the footbridge and access trail to the beach. Coastal dune habitat at Rodeo Beach/South Rodeo Beach is generally located between the crest of the beach and the lagoon and along the south side of the lagoon inlet west of the pedestrian bridge, and is in the area where dogs are currently allowed under voice control. Both Rodeo Lagoon and Rodeo Lake are currently closed to dogs for overall resource protection. Park staff, some in offices overlooking the beach and lagoon, have estimated that they observe dogs in the lagoon at least once a week, and on a daily basis during good weather. Therefore, alternative A would result in continued long-term moderate adverse impacts on the coastal dune plant community, including fenced dunes, because dune areas could be negatively affected by dogs through trampling, digging, and dog waste. Effects would be measurable and perceptible and may affect the overall integrity of a plant community.

Under alternative A, no permit system exists for dog walking. At Rodeo Beach/South Rodeo Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Rodeo Beach/South Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Rodeo Beach/South Rodeo Beach.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Rodeo Beach/South Rodeo Beach is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing trampling, digging, and dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Rodeo Beach/South Rodeo Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term moderate adverse impacts on the coastal dune plant community from dogs at Rodeo Beach/South Rodeo Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other restoration projects near Rodeo Beach/South Rodeo Beach and the interim permitting program should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be long term, minor, and adverse.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Dune communities, including fenced dunes, are in the area where dogs would be allowed under voice control and would be subject to impacts by dogs trampling, digging, and dog waste	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Rodeo Beach and South Rodeo Beach, the footbridge, and access trail to the beach. Under alternative B, on-leash dog walking would not allow dogs to roam freely along the beach. The dune communities located on the beach would be protected by physically restraining dogs; however, some individuals may still walk their dogs through this sensitive area. Vegetation located in this area and in the 6-foot area adjacent to the beach and trails (LOD area) would receive long-term minor adverse impacts from dogs trampling the vegetation. Nutrient addition from dog waste would also occur. Adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. On-leash dog walking restrictions would physically restrain dogs, which would protect vegetation and habitat off trail at this site, but even on-leash dogs could trample unfenced dune vegetation at this site. Therefore, assuming compliance, the overall impact on coastal dune vegetation under alternative B would be negligible to long term, minor, and adverse because measurable or perceptible changes in the dune plant community could occur, but would be localized in a relatively small area.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Rodeo Beach/South Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Rodeo Beach/South Rodeo Beach.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Rodeo Beach/South Rodeo Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible to long-term minor adverse impacts on the coastal dune plant community from dogs at Rodeo Beach/South Rodeo Beach under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other restoration projects near Rodeo Beach/South Rodeo Beach should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be negligible.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation, but even on-leash dogs could trample unfenced dune vegetation	Beneficial, assuming compliance	Negligible cumulative impact

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would establish a VSCA on Rodeo Beach that includes areas of vegetated coastal foredunes within the VSCA extending from the crest of the beach east to the lagoon and south to the ridge on the beach north of South Rodeo Beach. The installation of a post-and-cable fence along the west end of Rodeo Lagoon would discourage visitors from accessing the lagoon, but would not physically exclude dogs from this area. A fence more impervious to dogs in this area is not feasible because winter storm waves wash over the entire beach, and wind-driven litter and debris would be trapped in the fence. In the VSCA at Rodeo Beach, dogs would create long-term moderate adverse impacts on coastal foredune vegetation due to the large size of the VSCA and the vegetation within this off-leash area. Dogs would run/play through the foredune areas, potentially trampling and digging up vegetation and adding nutrients through dog waste.

The long-term moderate adverse impacts from dogs in the LOD area would occur in a large area compared to the site as a whole. Physically restraining dogs with a leash in other areas of the site outside of the VSCA would protect vegetation and habitat, but most dune vegetation is in the VSCA and would be affected by dogs. Therefore, assuming compliance, the overall impact on vegetation under alternative B would be long term, minor to moderate, and adverse because measurable or perceptible changes in the dune plant community would occur, and the integrity of the plant community could be negatively affected by dogs through trampling, digging, and dog waste.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. The long-term minor to moderate adverse impacts on the coastal dune plant community from dogs at Rodeo Beach/South Rodeo Beach under alternative C were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the park stewardship programs and other restoration projects near Rodeo Beach/South Rodeo Beach should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be long term, minor, and adverse.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs in some areas and fencing would protect dune vegetation, but dune vegetation is also in VSCA and subject to impacts from dogs	Beneficial to no change, assuming compliance	Long-term, minor, adverse cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, restricting dogs to on leash only on the access trail, the footbridge and on Rodeo Beach north of the footbridge, and prohibiting dog walking on the rest of Rodeo Beach, South Rodeo Beach, and the connecting paths would provide additional protection to the vegetated foredunes along the crest of the dunes, but the vegetated foredunes along the lagoon inlet west of the pedestrian bridge would still be open to on-leash dog walking. There are no obvious trails in this location and no fencing planned, since the beach topography near the inlet is dynamic in the winter months. The dune communities located on the beach would be protected by physically restraining dogs on a leash; however, some individuals may still walk their dogs through this sensitive area. Coastal dune vegetation located in this area and in the 6-foot area adjacent to the beach and trails (LOD area) would receive long-term minor adverse impacts from dogs trampling the vegetation. Nutrient addition from dog waste would also occur.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole because dogs would be prohibited on the southern portion of Rodeo Beach, on the access trail to South Rodeo Beach, and on South Rodeo Beach. Physically restraining dogs with a leash would generally protect vegetation and habitat at the site. Therefore, the overall impact on vegetation under alternative D, assuming compliance, would be long term, minor, and adverse because measurable or perceptible changes in the dune plant community would occur, but would be localized in a relatively small area.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on coastal dune vegetation.

Cumulative Impacts. The long-term minor adverse impacts on the coastal dune plant community from dogs at Rodeo Beach under alternative D were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the park stewardship programs and other restoration projects near Rodeo Beach should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be negligible.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation, but vegetated foredunes along the lagoon inlet would still be open to on-leash dog walking	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Under alternative E, dog walking under voice and sight control would be allowed in a VSCA on Rodeo Beach and South Rodeo Beach. On-leash dog walking would be allowed on the footbridge and access trail to the beach. The VSCA includes some areas of coastal dune habitat, including the foredune area east of the crest of the dune. Dogs would run/play through the foredune area, potentially trampling and digging up vegetation and adding nutrients through dog waste. Impacts in the VSCA would be long term, would be readily apparent, and would cause noticeable changes in coastal dune vegetation. Vegetation located in the 6-foot area adjacent to the on-leash portion of the beach and the trails (LOD area) would also be affected by dogs. In the VSCA and the LOD area, long-term moderate adverse impacts on vegetation from dogs through trampling and digging would occur; nutrient addition from dog waste would also occur. The long-term moderate adverse impacts from dogs in the LOD area would occur in a large area compared to the site as a whole. Physically restraining dogs with a leash in the areas outside of the VSCA would protect the majority of dune vegetation and habitat off trail, but some dune vegetation is in the VSCA and would be affected by dogs. Therefore, assuming compliance, the overall impact on vegetation under alternative E would be long term, minor to moderate, and adverse because measurable or perceptible changes in the dune plant community would occur, and the integrity of the plant community could be negatively affected by dogs through trampling, digging, and dog waste.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. The permits could restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on vegetation.

Cumulative Impacts. The long-term minor to moderate adverse impacts on the coastal dune plant community from dogs at Rodeo Beach/South Rodeo Beach under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the park stewardship programs and other restoration projects near Rodeo Beach/South Rodeo Beach should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be long term, minor, and adverse.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Fencing and physical restraint of dogs would protect some dune vegetation, but a large amount of dune vegetation is within the VSCA	Beneficial, assuming compliance	Long-term, minor, adverse cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would establish a VSCA on Rodeo Beach that includes areas of vegetated coastal foredunes within the VSCA extending from the crest of the beach east to the lagoon and south to the sea stacks that divide the main beach from South Rodeo Beach. The installation of a post-and-cable fence along the west end of Rodeo Lagoon would discourage visitors from accessing the lagoon, but would not physically exclude dogs from this area. A fence more impervious to dogs in this area is not feasible because winter storm waves wash over the entire beach, and wind-driven litter and debris would be trapped in the fence. In the VSCA at Rodeo Beach/South Rodeo Beach, dogs would create long-term moderate adverse impacts on coastal foredune vegetation due to the large size of the VSCA and the vegetation within this off-leash area. Dogs would run/play through the foredune areas, potentially trampling and digging up vegetation and adding nutrients through dog waste. The adverse impacts from dogs in the LOD area would occur in a large area compared to the site as a whole. Physically restraining dogs with a leash in the areas outside of the VSCA would protect vegetation and habitat off trail, but some dune vegetation is in the VSCA and would be affected by dogs. Therefore, the overall impact on vegetation under the preferred alternative would be long term, minor to moderate, and adverse because measurable or perceptible changes in the dune plant community would occur, and the integrity of the plant community could be negatively affected by dogs through trampling, digging, and dog waste.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Rodeo Beach/South Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Rodeo Beach/South Rodeo Beach.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Rodeo Beach/South Rodeo Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term minor to moderate adverse impacts on the coastal dune plant community from dogs at Rodeo Beach/South Rodeo Beach under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other restoration projects near Rodeo Beach/South Rodeo Beach should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be long term, minor, and adverse.

RODEO BEACH/SOUTH RODEO BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs in some areas and fencing would protect dune vegetation, but dune vegetation is also in the VSCA and subject to impacts from dogs	Beneficial to no change, assuming compliance	Long-term, minor, adverse cumulative impacts

SAN FRANCISCO COUNTY SITES

Crissy Field

Common to All Action Alternatives. Impacts from dogs as a result of the two different definitions of the Crissy Field WPA (the 36 CFR 7.97(d) definition for alternative A and the Warming Hut to approximately 900 feet east of the former Coast Guard Pier definition for alternatives B–E) would be the same for all alternatives. Even though the WPA would be expanded for alternatives B–E, this change would not influence the overall impacts analysis at this site because it would neither increase nor decrease the impacts at Crissy Field described in the paragraphs that follow. Further explanation of these two definitions can be found in the "Current Regulations and Policies" section of chapter 2.

Alternative A: No Action. Dogs are currently allowed under voice control throughout Crissy Field except for the WPA (which has a seasonal leash restriction), the tidal marsh (which is closed to dogs), and the parking and picnic areas (which allow on-leash dog walking only). This site has documented moderate to high visitor use and compliance with dog walking regulations is low. Violations have been issued for having pets in the Crissy Field marsh, which is closed to both humans and pets. There is currently considerable access to dune habitat at Crissy Field, although the restored dune areas are fenced. In the restored dune areas, the shifting sand buries the fences, and dogs have accessed dune areas; there are also sparsely vegetated foredunes that have formed in the WPA that are frequently trampled by dogs.

Therefore, alternative A would result in continued long-term moderate adverse impacts on the coastal dune vegetation in the Central and East beach areas and the WPA. Impacts would result from trampling, digging, and waste from dogs. Effects on the coastal community would be measurable and perceptible over a relatively large area, and would affect the overall integrity of the plant community. Additionally,

the restoration areas at Crissy Field, which have been planted with CNPS-listed species such as San Francisco dune gilia and San Francisco spineflower, would continue to be at risk.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking at Crissy Field occurs regularly. Commercial dog walking would continue to contribute to the long-term moderate adverse impacts on the coastal dune vegetation. Commercial dog walkers with multiple dogs under voice control would impact vegetation through dogs trampling, digging, and depositing dog waste.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Crissy Field. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Crissy Field. Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of a tidal marsh and dune habitat. The subsequent 5-year monitoring program included tracking of hydrology and geomorphology, water quality, soils and sedimentation, vegetation, fish, invertebrates, and birds (NPS 2010a, 1–2).

For the lands managed by the Presidio Trust, the Presidio Trust Management Plan (PTMP) was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). Management objectives in the PTMP that are applicable to vegetation include identifying and protecting sensitive wildlife species, and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forest is being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on vegetation at or in the vicinity of Crissy Field.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Crissy Field occurs regularly. Therefore, the interim compendium amendment would have a beneficial effect on coastal communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing trampling, digging, and dog waste.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. The Doyle Drive project required the Crissy Field Center to move to a new location during the project construction. That resulted in a newly constructed facility at East Beach in late 2009 to house the Crissy Field Center environmental programs (GGNPC 2010b). Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term moderate adverse impacts on the coastal dune plant community from dogs at Crissy Field under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs, the PTMP, the past re-creation of a tidal marsh and dune habitat at Crissy Field, and the interim permitting program should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the

coastal dune plant community under this alternative would be expected to be long term, minor, and adverse.

CRISSY FIELD ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Restored dune areas are fenced, but there is considerable access to dune habitat, which is also present in the WPA and subject to impacts by dogs through trampling, digging, and dog waste	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the promenade, Crissy Airfield, East and Central beaches, paths leading to Central Beach, trails and grassy areas near East Beach, around the Old Coast Guard Station, and on the Mason Street Bike Path. Having dogs on leash throughout the site would restrict dogs from going into the fenced dune habitat. However, some individuals may still allow their dogs to enter this sensitive area. The impacts from dogs on coastal dune vegetation adjacent to the trails and on-leash portions of the beach (LOD area) would be long term, minor, and adverse due to trampling and dog waste.

The adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Overall, assuming compliance, negligible impacts on coastal dune vegetation would occur as a result of this alternative. Physically restraining dogs would protect dune vegetation, and the WPA, which supports dunes, would be closed to dogs. No measurable or perceptible change in coastal dune vegetation or CNPS-listed plant species in coastal dune habitat would be expected.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Crissy Field, dogs walked by commercial dog walkers would contribute to a portion of the adverse impacts on vegetation from dogs at the site. Overall impacts on vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Crissy Field. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Crissy Field. Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of a tidal marsh and dune habitat. The subsequent 5-year monitoring program included tracking of hydrology and geomorphology, water quality, soils and sedimentation, vegetation, fish, invertebrates, and birds (NPS 2010a, 1–2).

For the lands managed by the Presidio Trust, the PTMP was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by

the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). Management objectives in the PTMP that are applicable to vegetation include identifying and protecting sensitive wildlife species, and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forest is being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on vegetation at or in the vicinity of Crissy Field.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. The Doyle Drive project required the Crissy Field Center to move to a new location during the project construction. That resulted in a newly constructed facility at East Beach in late 2009 to house the Crissy Field Center environmental programs (GGNPC 2010b). Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the coastal dune plant community from dogs at Crissy Field under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs, the PTMP, and the past re-creation of a tidal marsh and dune habitat at Crissy Field combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative would result in beneficial cumulative impacts.

CRISSY FIELD ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site; the WPA (which supports dunes) would be closed to dogs	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow dogs under voice and sight control with the addition of one VSCA on Central Beach and one at Crissy Airfield. On-leash dog walking would be allowed in the remainder of the site, except for East Beach, the fenced areas, and the WPA, where dogs would not be allowed. Having dogs on leash in the designated areas would restrict dogs from going onto the beach and into the fenced dunes habitat. Restoration areas at Crissy Field that have been planted with CNPS-listed species such as San Francisco dune gilia and San Francisco spineflower would be protected by leash requirements as part of alternative C. The impacts on coastal dune vegetation adjacent to the trails and on-leash portions of the beach (LOD area) and the Central Beach VSCA would be long term, minor, and adverse due to trampling, digging, and dog waste (nutrient addition would occur).

The long-term minor adverse impacts from dogs in the LOD area and the Central Beach VSCA would occur in a relatively small area compared to the site as a whole. Physically restraining dogs would protect vegetation and habitat off trail, and the WPA, which supports dunes, would be closed to dogs. Therefore, assuming compliance, the overall impacts on coastal dune vegetation under alternative C would be negligible because no measurable or perceptible changes in the dune plant community would occur: plant structure, abundance, and distribution (both quality and quantity) of the coastal community would not measurably change.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on coastal dune vegetation would be expected from this user group. Impacts on vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Crissy Field under alternative C were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the park stewardship programs, the PTMP, and the past re-creation of a tidal marsh and dune habitat at Crissy Field combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative would result in beneficial cumulative impacts.

CRISSY FIELD ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation in restored dune areas; trails, LOD area, and VSCAs are a small portion of the site; the WPA (which supports dunes) would be closed to dogs	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would prohibit dogs on all beaches, but would establish a VSCA on the western section of Crissy Airfield. On-leash dog walking would be allowed in all other areas of Crissy Field, except for the fenced areas and the beach. The VSCA does not contain any dune vegetation, but this community does exist adjacent to the trails. The impacts on coastal dune vegetation adjacent to the trails (LOD area) would be long term, minor, and adverse as a result of trampling and dog waste.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole, and the VSCA does not contain any dune vegetation. Physically restraining dogs would protect vegetation and habitat off trail, and the WPA, which supports dunes, would be closed to dogs. Therefore, assuming compliance, the overall impacts on coastal dune vegetation under alternative D would be negligible because no measurable or perceptible changes in the dune plant community would occur: plant structure, abundance, and distribution (both quality and quantity) of the coastal community would not measurably change.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on coastal dune vegetation.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Crissy Field under alternative D were considered together with the effects of the projects mentioned above under

alternative B. The beneficial effects from the park stewardship programs, the PTMP, and the past re-creation of a tidal marsh and dune habitat at Crissy Field combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative would result in beneficial cumulative impacts.

CRISSY FIELD ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; LOD area is a small portion of the entire site; the WPA (which supports dunes) would be closed to dogs	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Under alternative E, on-leash dog walking would be allowed on the promenade and the paths to Central Beach, in the WPA, on East Beach, on the trails and grassy areas near East Beach and around the former U.S. Coast Guard station, and on the Mason Street Bike Path. Two VSCAs would be established at the site, one on Crissy Airfield and one on Central Beach. Having dogs on leash in the designated areas would restrict dogs from entering the fenced dunes habitat. The impacts on coastal dune vegetation adjacent to the trails and on-leash portions of the beach (LOD area, including the WPA) as well as the Central Beach VSCA would be long term, minor, and adverse due to trampling, digging, and dog waste (nutrient addition would occur). The dune vegetation in the WPA would also experience long-term minor adverse impacts as a result of on-leash dogs.

Even though the long-term minor adverse impacts from on-leash dog walking in the Central Beach VSCA and the LOD area would affect only a small portion of the site, the overall impacts on dune vegetation at Crissy Field would also be long term, minor, and adverse, assuming compliance. Physically restraining dogs would protect dune vegetation in restored dune areas, but the WPA, which supports dunes, would be open to on-leash dogs as discussed in the LOD area above. Effects on coastal dune vegetation as a result of dogs would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on vegetation would be expected from this user group. Impacts on vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on the coastal dune plant community from dogs at Crissy Field under alternative E were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the park stewardship programs, the PTMP, and the past re-creation of a tidal marsh and dune habitat at Crissy Field should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be negligible.

CRISSY FIELD ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation in restored dune areas; trails, LOD area, and VSCAs are a small portion of the site; the WPA (which supports dunes) would be open to on-leash dogs	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. A VSCA on Central Beach and in the central section of Crissy Airfield in the preferred alternative would allow dogs under voice and sight control. On-leash dog walking would be allowed in the remainder of the site, except for East Beach, the fenced areas, picnic areas, the western portion of the airfield, and the WPA, where dogs would not be allowed. Having dogs on leash in the designated areas would restrict dogs from going onto the beach and into the fenced dunes habitat. Restoration areas at Crissy Field that have been planted with CNPS-listed species such as San Francisco dune gilia and San Francisco spineflower would be protected by leash requirements as part of the preferred alternative. The impacts on coastal dune vegetation adjacent to the trails and on-leash portions of the beach (LOD area) and the Central Beach VSCA would be long term, minor, and adverse due to trampling, digging, and dog waste (nutrient addition would occur).

The long-term minor adverse impacts from dogs in the LOD area and VSCAs would occur in a relatively small area compared to the site as a whole. Physically restraining dogs would protect vegetation and habitat off trail, and the WPA, which supports dunes, would be closed to dogs. Therefore, assuming compliance, the overall impacts on vegetation under the preferred alternative would be negligible because no measurable or perceptible changes in the dune plant community would occur: plant structure, abundance, and distribution (both quality and quantity) of the coastal community would not measurably change.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, the areas where a dog walker with more than three dogs can go would be limited to the two VSCAs, the direct beach access trails connecting the VSCAs, the Promenade (from the parking lot to the eastern-most trail leading to Central Beach only), and the Mason Street Bike Path, thus limiting the potential impacts on coastal communities. The permits could restrict use by time and area. Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on coastal dune vegetation would be expected from this user group. Impacts on coastal dune vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Crissy Field. The GGNRA Maintenance Division conducts many ongoing operations

throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Crissy Field. Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of a tidal marsh and dune habitat. The subsequent 5-year monitoring program included tracking of hydrology and geomorphology, water quality, soils and sedimentation, vegetation, fish, invertebrates, and birds (NPS 2010a, 1-2).

For the lands managed by the Presidio Trust, the PTMP was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). Management objectives in the PTMP that are applicable to vegetation include identifying and protecting sensitive wildlife species, and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forest is being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on vegetation at or in the vicinity of Crissy Field.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. The Doyle Drive project, which resulted in a newly constructed facility at East Beach in late 2009 to house the environmental programs of the Crissy Field Center (GGNPC 2010b, 1), is one example of such a project. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the coastal dune plant community from dogs at Crissy Field under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs, the PTMP, and the past re-creation of a tidal marsh and dune habitat at Crissy Field combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative would result in beneficial cumulative impacts.

CRISSY FIELD PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation in restored dune areas; trails, LOD area, and VSCAs are a small portion of the entire site; the WPA (which supports dunes) would be closed to dogs	Beneficial, assuming compliance	Beneficial cumulative impacts

Baker Beach and Bluffs to Golden Gate Bridge

Alternative A: No Action. Coastal dune scrub habitat at Baker Beach and Bluffs to Golden Gate Bridge is one of the few remaining intact stands of this vegetation type in central California. In coastal dune scrub habitat at Baker Beach and Bluffs to Golden Gate Bridge, restoration for pink sand-verbena has occurred, as well as restoration for the CNPS-listed species San Francisco dune gilia and San Francisco spineflower. Other documented CNPS-listed plant species at Baker Beach and Bluffs to Golden Gate Bridge include the Mission Delores (San Francisco) campion, dune tansy, Indian paintbrush, and San

Francisco wallflower (USFWS 2003). In some areas at this site, dogs and their owners/walkers have created a myriad of social trails in coastal dune vegetation. This site has documented low to moderate visitor use (varies depending on weather, holidays, and weekend use), and dog walking use is considered low to moderate (table 10).

Under alternative A, dogs would be allowed under voice control on the beach north of Lobos Creek and would be required to be on leash along trails, except the Batteries to Bluffs Trail, where dogs would not be allowed. A total of 135 dog-related incidents were reported between 2008 and 2016; a substantial number of these were for having dogs off-leash or within a closed area (tables 22a and 22b). As suggested by Shulzitski and Russell (2004, 5), heavy off-leash dog use increases deterioration of native dune communities. Although the dunes nearest the beach, which are actively planted and maintained by the park's resource stewardship programs, are fenced, dogs under voice control would have access to adjacent, undisturbed areas that support the growth of dune vegetation. Digging in dunes destabilizes the dunes, making it difficult for plants to establish in this habitat. Therefore, alternative A would result in continued long-term moderate adverse impacts on coastal dune vegetation at this site because the effects would be measurable and perceptible over a relatively large area, and would affect the overall integrity of a plant community.

No permit system exists for dog walking under alternative A. At Baker Beach and Bluffs to Golden Gate Bridge, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate Bridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Baker Beach and Bluffs to Golden Gate Bridge. Between August and November of 2007, 73,000 tons of landfill debris was unearthed by excavators at Baker Beach and Bluffs to Golden Gate Bridge and conveyed to the top of the cliffs as part of a remediation and restoration effort (Presidio Trust 2010a). The *Lobos Creek Valley Dune Restoration* project near Baker Beach and Bluffs to Golden Gate Bridge restored the coastal scrub and helped increase the population of the listed San Francisco lessingia (NPS 2010c, 1; SFGATE 2010, 1).

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Baker Beach and Bluffs to Golden Gate Bridge is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the deterioration of native dune communities related to dog waste and digging and trampling by dogs.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term moderate adverse impacts on dune vegetation from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation projects provided by the park stewardship programs, the *Lobos Creek Valley Dune Restoration* project, and the interim permitting program should reduce some of the adverse impacts on the coastal dune plant community from alternative A. Therefore, cumulative impacts on dune vegetation under this alternative would be expected to be long term, minor, and adverse.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Dogs and their owners/walkers have created social trails in coastal dune habitat, which would be subject to impacts from dogs through trampling, digging, and dog waste	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking except on the Batteries to Bluffs Trail and the Battery Crosby Trail, where dogs are not allowed. In addition, dogs would not be allowed on South Beach. In general, impacts would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trails. Vegetation in areas adjacent to the trails (LOD area) would be affected by dogs through trampling and dog waste (nutrient addition would occur). Impacts on dune vegetation along the trails would be long term, minor, and adverse. Impacts would be detectable, but not large enough to create a measurable or perceptible change in the dune plant community at this site.

When considering the entire site of Baker Beach, the long-term minor adverse impacts from dogs in the LOD area would affect only a small portion of the entire site. Therefore, the overall impact on coastal dune vegetation from on-leash dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible, assuming compliance. Physically restraining dogs would protect dune vegetation, and the use of social trails at this site would be reduced.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking activity is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on dune vegetation.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate Bridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Baker Beach and Bluffs to Golden Gate Bridge. Between August and November of 2007, 73,000 tons of landfill debris was unearthed by excavators at Baker Beach and

Bluffs to Golden Gate Bridge and conveyed to the top of the cliffs as part of a remediation and restoration effort (Presidio Trust 2010a). The *Lobos Creek Valley Dune Restoration* project near Baker Beach and Bluffs to Golden Gate Bridge restored the coastal scrub and helped increase the population of the listed San Francisco lessingia (NPS 2010c, 1; SFGATE 2010, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the coastal dune plant community from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation projects provided by the park stewardship programs and the *Lobos Creek Valley Dune Restoration* project combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the coastal dune plant community would result in beneficial cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site; use of social trails would be reduced	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, dog walking restrictions would be the same as those under alternative B, and impacts on coastal dune vegetation at this park site would also be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits could restrict use by time and area. Permits would be allowed for Baker Beach. Impacts on coastal dune vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on coastal dune vegetation at this park would be the same as those under alternative B: beneficial cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site; use of social trails would be reduced	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking on the section of Baker Beach south of the north parking lot and on all trails leading to that section of beach, as well as on the Coastal Trail. Dogs would be prohibited in the section of beach north of the north parking lot, approximately half of the beach, the trails leading to the northern section of the beach, and the Batteries to Bluffs and Battery Crosby Trails. Vegetation in areas adjacent to the trails (LOD area) would be affected by dogs through trampling and dog waste. Impacts on dune vegetation along the trails would be long term, minor, and adverse. Impacts would be detectable, but not large enough to create a measurable or perceptible change in the dune plant community at this site.

When considering the entire site of Baker Beach, the long-term minor adverse impacts from dogs in the LOD area would affect only a small portion of the entire site. Therefore, the overall impact on coastal dune vegetation from on-leash dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible, assuming compliance. Physically restraining dogs would protect dune vegetation, and the use of social trails at this site would be reduced.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on coastal dune vegetation.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative D were considered together with the effects of the projects mentioned above under alternative B "Cumulative Impacts." The beneficial effects from the rehabilitation projects provided by the park stewardship programs and the *Lobos Creek Valley Dune Restoration* project combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the coastal dune plant community would result in beneficial cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site; use of social trails would be reduced	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the northern portion of the beach and on all trails in the vicinity of Baker Beach except the Batteries to Bluffs Trail and the Battery Crosby Trail. A VSCA would be established on the southern portion of the beach, south of the north parking lot. In general, impacts would be limited to the VSCA, existing trails, and the 6-foot corridors immediately adjacent to the trails. Vegetation in areas adjacent to the trails (LOD area) and in the VSCA (which would experience concentrated use) would be affected by dogs through trampling, digging, and dog waste. Impacts on dune vegetation in the LOD area and in the VSCA would be long term, minor, and adverse.

The long-term minor adverse impacts from dogs in the LOD area and VSCA would result in overall long-term minor adverse impacts on the coastal dune vegetation, assuming compliance. Physically restraining dogs would protect dune vegetation, and the unfenced dunes would not be affected in this alternative. The use of social trails would be reduced, but a measurable or perceptible change in the dune plant community would occur as a result of disturbance from dogs, although this effect would remain relatively localized.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed for Baker Beach. Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. The long-term minor adverse impacts on dune vegetation from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the rehabilitation projects provided by the park stewardship programs and the *Lobos Creek Valley Dune Restoration* project should reduce some of the adverse impacts on the coastal dune plant community from alternative E. Therefore, cumulative impacts on dune vegetation under this alternative would be expected to be negligible.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; no unfenced dunes would be affected; the VSCA, trails, and LOD area are a small portion of the site; use of social trails would be reduced	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the section of Baker Beach north of Baker Beach Access Trail #2 and on the beach access trails leading to that section of beach, as well as on the Coastal Trail. Dogs would be prohibited in the section of beach south of the north parking lot (approximately half of the beach), on the trails leading to the southern section of the beach, and on the Dune Trail, the Batteries to Bluffs Trail, and the Battery Crosby Trail. Vegetation in areas adjacent to the trails (LOD area) would be affected by dogs through trampling and dog waste. Impacts on dune vegetation along the trails would be long term, minor, and adverse. Impacts

would be detectable, but not large enough to create a measurable or perceptible change in the dune plant community at this site.

The long-term minor adverse impacts from dogs in the LOD area would affect only a small portion of the site. Therefore, the overall impacts on coastal dune vegetation from on-leash dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible, assuming compliance. Physically restraining dogs would protect dune vegetation and the use of social trails at this site would be reduced.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs on Baker Beach with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. At Baker Beach, walking four to six dogs with an NPS-issued permit would be limited to the north parking lot, Baker Beach Access Trail #2, and the beach north of the trail. Permits could further restrict use by time and area. Impacts on coastal dune vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate Bridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Baker Beach and Bluffs to Golden Gate Bridge. Between August and November of 2007, 73,000 tons of landfill debris was unearthed by excavators at Baker Beach and Bluffs to Golden Gate Bridge and conveyed to the top of the cliffs as part of a remediation and restoration effort (Presidio Trust 2010a). The *Lobos Creek Valley Dune Restoration* project near Baker Beach and Bluffs to Golden Gate Bridge restored the coastal scrub and helped increase the population of the listed San Francisco lessingia (NPS 2010c, 1; SFGATE 2010, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the coastal dune plant community from dogs at Baker Beach and Bluffs to Golden Gate Bridge under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation projects provided by the park stewardship programs and the *Lobos Creek Valley Dune Restoration* project combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the coastal dune plant community would result in beneficial cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site; use of social trails would be reduced	Beneficial, assuming compliance	Beneficial cumulative impacts

Ocean Beach

Alternative A: No Action. Ocean Beach has a designated Snowy Plover Protection Area (SPPA) from Stairwell 21 south to Sloat Boulevard, which was implemented to protect the western snowy plover when it is present during the nonbreeding season. Under current conditions, the seasonal restriction continues to be implemented and requires dogs to be walked on leash from July 1 through May 15. Dogs are allowed under voice control in the SPPA from May 15 through July 1. This site has documented moderate to high visitor use, and compliance with the current regulations at Ocean Beach is considered poor. The NPS has observed that nearly 60 percent of dogs continue to be off-leash in the SPPA even after the seasonal leash restriction was implemented in the SPPA as a result of 36 CFR 7.97(d) (Hatch et al. 2007b, 3). Dogs are allowed under voice control both north of Stairwell 21 and south of Sloat Boulevard to Fort Funston, but there are no coastal dune communities located in these areas. Under alternative A, on-leash dog walking is allowed on the Ocean Beach Trail along the Great Highway from Stairwell 21 south to Sloat Boulevard. Between Stairwell 21 and Sloat Boulevard, the majority of the extensive dune system along portions of Ocean Beach is comprised of the non-native European beachgrass that was previously planted to stabilize the sand on the beach, while the sparsely vegetated foredunes consist of native dune vegetation. Alternative A would result in continued long-term minor adverse impacts on coastal dune plant species because the integrity of the plant community inhabiting dune areas could be negatively affected by off-leash dogs through trampling, digging, and dog waste, although the majority of the dune system is vegetated with non-native European beachgrass.

Under alternative A, no permit system exists for dog walking. At Ocean Beach, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of vegetation communities. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Ocean Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Ocean Beach. The *Ocean Beach–Great Highway Erosion Control Project* is developing long-term solutions to beach and coastal bluff erosion problems at Ocean Beach along the Great Highway (Highway 1) consistent with the enhancement of natural processes (City and County of San Francisco 2008, 3, 7). The *Ocean Beach Master Plan* includes plans to restore habitat at Ocean Beach, resulting in beneficial impacts on coastal communities.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog

walking at Ocean Beach is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing trampling, digging, and dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Ocean Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term minor adverse impacts on the coastal dune plant community from dogs at Ocean Beach under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the park stewardship programs, the erosion control project, and the interim permitting program would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative impacts analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the park stewardship programs and from the erosion control project combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts.

OCEAN BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	The majority of the dunes along portions of Ocean Beach are comprised of the non-native European beachgrass, while the sparsely vegetated foredunes consist of native dune vegetation; these areas would be subject to impacts from dogs through trampling, digging, and dog waste	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Ocean Beach Trail along the Great Highway, as well as on the beach north of Stairwell 21 and south of Sloat Boulevard. Dogs would not be allowed on the beach in the SPPA. In general, impacts would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trail (LOD area). In the LOD area, impacts on the coastal dune vegetation would be long term, minor, and adverse because the integrity of the plant community inhabiting dune areas could be negatively affected by dogs through trampling and dog waste, although the majority of the dunes are vegetated with non-native European beachgrass.

The long-term minor adverse impacts on dune vegetation adjacent to the trail would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect dune vegetation, even though the majority is non-native European beachgrass. Therefore, assuming compliance, the overall impact on coastal dune vegetation at Ocean Beach would be negligible. Impacts would be detectable, but not large enough to create a measurable or perceptible change in the dune plant community at this site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking activity is not common at Ocean Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of vegetation communities. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Ocean Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Ocean Beach. The *Ocean Beach–Great Highway Erosion Control Project* is developing long-term solutions to beach and coastal bluff erosion problems at Ocean Beach along the Great Highway (Highway 1) consistent with the enhancement of natural processes (City and County of San Francisco 2008, 3, 7). The *Ocean Beach Master Plan* includes plans to restore habitat at Ocean Beach, resulting in beneficial impacts on coastal communities.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Ocean Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the coastal dune plant community from dogs at Ocean Beach under alternative B were considered together with the effects of the actions mentioned above. The beneficial effects from the park stewardship programs and from the erosion control project combined with the negligible impacts from alternative B would result in negligible cumulative impacts.

OCEAN BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation even though the majority is non-native grass; the trail and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would not allow dogs on the beach in the SPPA, but would allow on-leash dog walking on the Ocean Beach Trail east of the dunes adjacent to the Great Highway and would allow dog walking under voice and sight control in a VSCA on the beach north of Stairwell 21. No dune communities are located in the VSCA north of Stairwell 21. Under alternative C, impacts would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trail (LOD area). In the LOD area, impacts on the coastal dune vegetation would be long term, minor and adverse because the integrity of the plant community inhabiting dune areas could be negatively affected by dogs through trampling and dog waste, although the majority of the dunes are vegetated with non-native European beachgrass. Because there are no dune communities in the VSCA north of Stairwell 21, no impact would occur in the VSCA.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Ocean Beach is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking activity is not common at Ocean Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Ocean Beach under alternative C were considered together with the effects of the actions mentioned above under alternative B. The beneficial effects from the park stewardship programs and from the erosion control project combined with the negligible impacts from alternative C would result in negligible cumulative impacts.

OCEAN BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation, even though the majority is non-native grass; the trail and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would generally have the same dog walking restrictions as alternative B, except dogs would not be allowed on the beach south of Sloat Boulevard, and impacts would be the same: long term, minor, and adverse in the LOD area and negligible overall.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on coastal dune vegetation.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Ocean Beach under alternative D were considered together with the effects of the actions mentioned above under alternative B. The beneficial effects from the park stewardship programs and from the erosion control project combined with the negligible impacts from alternative D would result in negligible cumulative impacts.

OCEAN BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation, even though the majority is non-native grass; the trail and the LOD area are a small portion of the entire site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking all year on the beach in the SPPA and south of Sloat Boulevard. Dog walking under voice and sight control would be allowed in a VSCA north of Stairwell 21. The VSCA north of Stairwell 21 does not contain coastal dunes. However, on-leash dog walking would create impacts on dune vegetation because coastal dunes are located in the SPPA. On-leash dog walking would also be allowed on the Ocean Beach Trail along the Great Highway. In general, impacts would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trails (LOD area). In the LOD area, impacts on the coastal dune vegetation would be long term, minor, and adverse because the integrity of the plant community inhabiting dune areas could be negatively affected by dogs through trampling and dog waste, although the majority of the dunes are vegetated with non-native European beachgrass. Because there are no dune communities in the VSCA north of Stairwell 21, there would be no impact in the VSCA.

The impacts on coastal dune vegetation in the SPPA would occur in a relatively large area of the site. In the coastal dunes of the SPPA, there are some areas of sparsely vegetated foredunes, but the majority of the dune vegetation consists of the non-native plant species European beachgrass; in some areas this species has been removed and native dune vegetation has been planted. Therefore, assuming compliance, the overall impacts from dogs on the coastal dune vegetation at this site would range from negligible to long term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Ocean Beach is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking activity is not common at Ocean Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. The negligible to long-term minor adverse impacts on the coastal dune plant community from dogs at Ocean Beach under alternative E were considered together with the effects of the actions mentioned above under alternative B. The benefits to vegetation from the park stewardship programs and from the erosion control project would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative impacts analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the park stewardship programs and from the erosion control project combined with the negligible to long-term minor adverse impacts from alternative E would result in negligible to long-term minor adverse cumulative impacts.

OCEAN BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation, even though the majority is non-native grass; the trail and the LOD area are a small portion of the site but the impact on vegetation in the SPPA would occur in a relatively large area of the entire site	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would not allow dogs on the beach in the SPPA, but would allow on-leash dog walking on the Ocean Beach Trail east of the dunes adjacent to the Great Highway. The preferred alternative would also allow dog walking under voice and sight control

in a VSCA on the beach north of Stairwell 21. No dune communities are located in the VSCA north of Stairwell 21. Under the preferred alternative, impacts would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trail (LOD area). In the LOD area, impacts on the coastal dune vegetation would be long term, minor, and adverse because the integrity of the plant community inhabiting dune areas could be negatively affected by dogs through trampling and dog waste, although the majority of the dunes are vegetated with non-native European beachgrass. Because there are no dune communities in the VSCA north of Stairwell 21, no impact would occur in the VSCA.

The long-term minor adverse impacts on coastal dune vegetation in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect dune vegetation, even though the majority is non-native grass. Therefore, assuming compliance, the overall impact on coastal dune vegetation at Ocean Beach would be negligible because no measurable or perceptible change in the plant community would be expected.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Ocean Beach is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking activity is not common at Ocean Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of vegetation communities. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Ocean Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Ocean Beach. The *Ocean Beach–Great Highway Erosion Control Project* is developing long-term solutions to beach and coastal bluff erosion problems at Ocean Beach along the Great Highway (Highway 1) consistent with the enhancement of natural processes (City and County of San Francisco 2008, 3, 7). The *Ocean Beach Master Plan* includes plans to restore habitat at Ocean Beach, resulting in beneficial impacts on coastal communities.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Ocean Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the coastal dune plant community from dogs at Ocean Beach under the preferred alternative were considered together with the effects of the actions mentioned above. The beneficial effects from the park Stewardship Programs and from the erosion control project combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts.

OCEAN BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation, even though the majority is non-native grass; the trail and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Fort Funston

Alternative A: No Action. Fort Funston contains the last remnant of the expansive coastal dune complex that once covered the entire western portion of San Francisco. The habitat has been adversely affected by the site's development as a military site in the 1930s and use of non-native ice plant to stabilize the sand around the military facilities. Dogs are currently allowed under voice control on the beach and throughout upper Fort Funston (including a habitat corridor of coastal dune habitat along the Sunset Trail), with the exception of a the 12-acre fenced Habitat Protection Area closure in upper Fort Funston and the seasonal advisory (April 1 – August 15) for bank swallow protection on a section of beach extending 50 feet from the base of the coastal bluff below the bank swallow habitat areas (GGNRA Compendium; appendix B). Fort Funston has documented high visitor use (table 10), and a total of 172 dog-related incidents were recorded from 2008 through 2011 with an additional 157 violations between 2012 and 2016 (tables 26a and 26b). Disturbance of the cliffs in most instances would potentially contribute to cliff erosion since the cliffs are very unstable, which may be a contributing factor that results in the need for dog rescues at this site.

Visitors can access areas surrounding the bluffs from above the beach at the Funston Beach Trail North. Signs and fencing along the bluff edge and along the beach below the bank swallow habitat have been installed to restrict access to these areas by visitors. During the monthly bird surveys at Fort Funston, dogs were recorded in the 12-acre Habitat Protection Area, which is closed to public access; on many occasions, dogs and humans were observed inside this area (Shulzitski and Russell 2004). Commercial dog walking is also popular and is considered a high use activity at this site. Current heavy use by recreationists affects the native dune vegetation by trampling, thereby weakening plant root systems. Dogs and their owners/walkers have created a myriad of social trails in coastal dune vegetation between the parking lot and the Sunset and Chip trails. The NPS has implemented dune restoration at Fort Funston, and has planted the native foredune species pink sand-verbena (also a CNPS-listed plant species) and dune tansy in a 12-acre Habitat Restoration Area. The restoration area is enclosed by fencing to protect it from recreational activity; however, dogs have accessed the restoration areas at Fort Funston despite the fencing. The majority of Fort Funston is undeveloped and denuded of vegetation as a result of direct impacts from dogs through trampling, digging, and dog waste. This site would have the potential to be restored to native plant habitat and is part of the recovery area in the *Recovery Plan for Coastal Plants of the Northern San Francisco Peninsula* (USFWS 2003), but restoration is precluded by unmanaged (or unrestricted) dog use at the site; the level of trampling and nutrient input may inhibit the ability of the NPS to restore the area. Restoration currently can only be carried out in the 12-acre closed area, as dogs and visitors have accessed all other portions of the site, including the bluff tops.

Under alternative A, dogs would continue to access the remnant coastal dune habitat, resulting in long-term major adverse impacts on coastal dune vegetation, including pink sand-verbena, and on restoration areas at Fort Funston because the integrity of the plant community inhabiting dune areas would continue

being negatively affected by dogs through trampling, digging, and dog waste; restoration at the site would be precluded by dogs.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking regularly occurs at Fort Funston. Commercial dog walking would continue to contribute to the long-term major adverse impacts on vegetation. Dune habitat would be impacted by dogs through trampling, digging, and dog waste.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Fort Funston. The City of Daly City prepared the *Vista Grande Drainage Basin Improvement Project Draft EIR/EIS* to address storm-related flooding, reduce erosion along Lake Merced, and provide other potential benefits such as habitat enhancement and lake level augmentation (City of Daly City 2016).

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking occurs regularly at Fort Funston and dogs are allowed under voice and sight control throughout the site. Therefore, the interim compendium amendment would have a beneficial effect on coastal communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing trampling, digging, and dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Fort Funston. For example, the NPS is planning to construct new restroom and maintenance facilities at Fort Funston, which has the potential to have an adverse impact on vegetation in the area (NPS 2010d, 1). The Vista Grande portion of Daly City's stormwater collection system includes an underground collection system that routes storm flows northwest to the Vista Grande canal and tunnel for discharge to an outfall structure at the beach below Fort Funston (City of Daly City 2010b, 3). This system has the potential to adversely affect vegetation in the area of Fort Funston.

The long-term major adverse impacts on the coastal dune plant community from dogs at Fort Funston under alternative A were considered together with the effects of the projects mentioned above. There would be a combination of adverse and beneficial actions in and around Fort Funston; when combined, these actions would balance out, resulting in negligible impacts. Therefore, the cumulative impacts analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on the coastal dune plant community from dogs under this alternative would be expected to be long term, major, and adverse.

FORT FUNSTON ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term major adverse impacts	The majority of the site is undeveloped and denuded of vegetation as a result of unmanaged (or unrestricted) dog use at the site; the level of trampling and nutrient input may preclude (or inhibit) restoration at the recovery area; there is high visitor use and moderate to high levels of incidents related to dog activities at the site	N/A	Long-term major adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed on the beach and trails that are not closed to dogs. Since the distribution of the draft plan/SEIS, the Battery Davis Trail has been closed to visitors by the NPS due to safety concerns from coastal erosion. Areas closed to dogs include a 12-acre habitat protection area that restricts visitors and dogs to protect bank swallow habitat and native plant communities, improve public safety, and reduce impacts to the coastal bluffs and dunes and a section of the Sunset Trail in the northern portion of Fort Funston, which is closed due to erosion. Dog walking under voice control would not be allowed under this alternative. Coastal dune habitat north of the Funston Beach Trail North and west of the Sunset Trail in Fort Funston would remain closed for habitat protection; additional restored habitat between the Sunset Trail and Skyline Boulevard would also be closed to visitors. These closures allow for better protection of restoration sites and the potential recovery of the native San Francisco lessingia. In general, impacts on the coastal dune vegetation of Fort Funston would be limited to the 6-foot corridors immediately adjacent to the trails. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse. Dogs could enter coastal dune habitat and affect it through trampling and dog waste. While dogs would cause impacts on the dunes, most of the vegetation accessible to dogs under alternative B in the coastal dune habitat in Fort Funston is non-native; therefore, the impacts would not be considered greater than minor and adverse.

The long-term minor adverse impacts on coastal dune vegetation adjacent to the trails would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect dune vegetation, the site could potentially be restored, and the habitat corridor at the site (coastal dune habitat along the Sunset Trail) would be protected. Therefore, assuming compliance, the overall impacts on coastal dune vegetation at Fort Funston would be negligible because no measurable or perceptible change in the coastal dune community would be expected as a result of alternative B.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Fort Funston, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on coastal dune vegetation from dogs at the site. Overall impacts on coastal dune vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving

conditions for vegetation and wildlife habitat and contributing to the quality of soils. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Fort Funston. The City of Daly City prepared the *Vista Grande Drainage Basin Improvement Project Draft EIR/EIS* to address storm-related flooding, reduce erosion along Lake Merced, and provide other potential benefits such as habitat enhancement and lake level augmentation (City of Daly City 2010a, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Fort Funston. For example, the NPS is planning to construct new restroom and maintenance facilities at Fort Funston, which has the potential to have an adverse impact on vegetation in the area (NPS 2010d, 1). The Vista Grande portion of Daly City's stormwater collection system includes an underground collection system that routes storm flows northwest to the Vista Grande canal and tunnel for discharge to an outfall structure at the beach below Fort Funston (City of Daly City 2010b, 3). This system has the potential to adversely affect vegetation in the area of Fort Funston.

The negligible impacts on the coastal dune plant community from dogs at Fort Funston under alternative B were considered together with the effects of the projects mentioned above. There would be a combination of adverse and beneficial actions in and around Fort Funston; when combined, these actions would balance out, resulting in negligible impacts. Therefore, cumulative impacts on the coastal dune plant community from dogs under this alternative would be expected to be negligible.

FORT FUNSTON ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the entire site; site could potentially be restored and habitat corridor would be protected	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking on all trails north of the parking lot (except the Sunset Trail from the parking lot to the junction with the Chip Trail, and the Funston Horse Trail, which would be closed to dogs and the Battery Davis Trail, which is closed to visitors due to erosion), and the Funston Beach Trail South (sand ladder) and Sunset Trail south of the main parking lot. Dog walking under voice and sight control would be allowed in two VSCAs: one on the beach and another adjacent to the parking lot. The upland VSCA is in existing coastal dune vegetation (which includes the non-native ice plant) that has been fragmented by a myriad of social trails made by dogs and humans traversing the area under current conditions. Through concentrated dog use in this designated VSCA, the coastal vegetation would degrade and the potential for restoration of this remnant coastal dune habitat would be limited. In addition to impacts in the VSCAs, impacts on the coastal dune vegetation would also occur in the 6-foot corridors immediately adjacent to the trails (LOD area). Dogs could enter coastal dune habitat and affect it through trampling, digging and dog waste. In the LOD area and VSCAs, impacts on coastal dune vegetation would be long term, moderate, and adverse. However, designation of VSCAs could lead to greater compliance and reduced impacts in other (non-VSCA) areas of the site. While dogs would cause impacts on the dunes, most of the vegetation accessible to dogs under alternative C in the coastal dune habitat in Fort Funston is non-native; therefore, the impacts would not be considered greater than moderate and adverse.

Assuming compliance, alternative C would result in an overall long-term minor to moderate adverse impact on coastal dune habitat because the beach VSCA is located in coastal dune habitat that would degrade, but the area in the VSCA is only a small portion of the entire site. Physically restraining dogs would protect dune vegetation and reduce social trails at this site, but dog use would still limit potential restoration even though the habitat corridor would be protected.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed for Fort Funston. Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts on coastal dune vegetation would be expected from this user group. Impacts on coastal dune vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, minor to moderate, and adverse.

Cumulative Impacts. The long-term minor to moderate adverse impacts on the coastal dune plant community from dogs at Fort Funston under alternative C were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of adverse and beneficial effects from actions in and around Fort Funston; when combined, these actions would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the coastal dune plant community from dogs under this alternative would be expected to be long term, minor to moderate, and adverse.

FORT FUNSTON ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation and reduce social trails; the upland VSCA could support dune vegetation that would be affected but potential for restoration would be limited, although the habitat corridor would be protected and restored	Beneficial, assuming compliance	Long-term minor to moderate adverse cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Dog walking restrictions and impacts for alternative D would be similar to those described above for alternative C, although there would be on-leash dog walking instead of a VSCA on the beach and the upland VSCA would be located adjacent to the Sunset Trail, in coastal dune habitat. The proposed VSCA, which would be fenced, would also be in an area that has been heavily affected by social trails. The vegetation would further degrade through concentrated use in this designated VSCA, and the potential for restoration of this remnant coastal dune habitat would be limited. In addition to impacts in the VSCA, impacts on the coastal dune vegetation would also occur in the 6-foot corridors immediately adjacent to the trails (LOD area). Dogs could enter coastal dune habitat and affect it through trampling, digging, and dog waste. In the LOD area and VSCA, impacts on coastal dune vegetation would be long term, moderate, and adverse. However,

designation of a VSCA could lead to greater compliance and reduced impacts in other (non-VSCA) areas of the site. While dogs would cause impacts on the dunes, most of the vegetation accessible to dogs under alternative D in the coastal dune habitat in Fort Funston is non-native; therefore, the impacts would not be considered greater than moderate and adverse.

Assuming compliance, alternative D would result in overall long-term minor to moderate adverse impacts on coastal dune habitat because the VSCA is located in coastal dune habitat that would degrade, but the area in the VSCA is only a small portion of the entire site. Physically restraining dogs on leash would protect dune vegetation and reduce social trails at this site, but dog use would still limit potential restoration even though the habitat corridor would be protected.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on coastal dune vegetation.

Cumulative Impacts. The long-term minor to moderate adverse impacts on the coastal dune plant community from dogs at Fort Funston under alternative D were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of adverse and beneficial effects from actions in and around Fort Funston; when combined, these actions would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the coastal dune plant community from dogs under this alternative would be expected to be long term, minor to moderate, and adverse.

FORT FUNSTON ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation and reduce social trails; however, the VSCA supports dune vegetation that would be affected, limiting potential restoration	Beneficial, assuming compliance	Long-term minor to moderate adverse cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on all trails except the Funston Horse Trail, which is closed to dogs and the Battery Davis Trail and the northern end of the Sunset Trail, which are closed due to erosion. Dog walking under voice and sight control would be allowed in two VSCAs. One VSCA would be on the beach south of the Funston Beach Trail North to the Fort Funston southern boundary. The second ("upland") VSCA would extend north from the main parking lot. This VSCA corridor would extend from just north of the new trail to be built along the northern edge of the parking lot that extends to and includes the Funston Beach Trail North. The VSCA corridor includes the Chip Trail and sections of the Sunset Trail, Funston Road, and Battery Davis Trail (West), all north of the parking lot. The VSCA also extends into the disturbed area across from the Funston Beach Trail North.

The upland VSCA would be in existing coastal dune vegetation that has been fragmented by a myriad of social trails made by dogs and humans traversing the area under current conditions. Through concentrated dog use in this designated VSCA, the vegetation would degrade and the potential for restoration of this remnant coastal dune habitat would be limited. In addition to impacts in the VSCA, impacts on coastal dune vegetation would also occur in the 6-foot corridors immediately adjacent to the trails (LOD area).

Dogs could enter coastal dune habitat and affect it through trampling, digging, and dog waste. In the LOD area and VSCA, impacts on coastal dune vegetation would be long term, major, and adverse. However, designation of a VSCA could lead to greater compliance and reduced impacts in other (non-VSCA) areas of the site. While dogs would cause impacts on the dunes, most of the vegetation accessible to dogs under alternative E in the coastal dune habitat in Fort Funston is non-native; therefore, the impacts would be considered major and adverse because of the large size of the two VSCAs proposed as part of alternative E.

Assuming compliance, alternative E would result in an overall long-term moderate adverse impact on coastal dune habitat because the upland VSCA corridor is in coastal dune vegetation and encompasses a large portion of coastal dune habitat, which would continue to degrade. In other areas, physically restraining dogs would protect dune vegetation, but restoration potential is limited at this site due to disturbance of vegetation by dogs.

Under alternative E, all dog walkers at Fort Funston, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts on coastal dune vegetation would be expected from this user group. Impacts on coastal dune vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, moderate, and adverse.

Cumulative Impacts. The long-term moderate adverse impacts on the coastal dune plant community from dogs at Fort Funston under alternative E were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of adverse and beneficial effects from actions in and around Fort Funston; when combined, these actions would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the coastal dune plant community from dogs under this alternative would be expected to be long term, moderate, and adverse.

FORT FUNSTON ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term moderate adverse impacts, assuming compliance	The large, upland VSCA corridor is in coastal dune vegetation; in other areas, physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site but VSCA corridor is large; restoration potential is limited	Beneficial, assuming compliance	Long-term moderate adverse cumulative impacts

Alternative F: Preferred Alternative. On-leash dog walking would be allowed on all trails north of the parking lot that are outside the VSCA, except for the Funston Horse Trail, which would be closed to dogs and the Battery Davis Trail and the northern end of the Sunset Trail, which are closed due to erosion. On-leash dog walking would also be allowed on the Funston Beach Trail South (sand ladder), the Sunset Trail south of the main parking lot, and a future planned trail adjacent to Great Highway in the northern

portion of the site. Dog walking under voice and sight control would be allowed in two designated VSCAs, one on the beach south of the Funston Beach Trail North and a second ("upland" VSCA) north of the main parking lot. The "upland" VSCA would include the following areas: the Funston Trail, the disturbed area northeast of the Funston Trail, the Funston Beach Trail (North), the area east of (but not including) the Sunset Trail and north of the main parking lot, encompassing the Chip Trail and its eastern embankment, and the Battery Davis Trail (West). The Chip Trail would be hardened to improve accessibility.

The upland VSCA is in existing coastal dune vegetation (which includes the non-native ice plant) that has been fragmented by a myriad of social trails made by dogs and humans traversing the area under current conditions. Through concentrated use in this designated VSCA, the coastal dune vegetation would degrade and the potential for restoration of this remnant coastal dune habitat would be limited. In addition to impacts in the VSCAs, impacts on the coastal dune vegetation would also occur in the 6-foot corridors immediately adjacent to the trails (LOD area). Dogs could enter coastal dune habitat and affect it through trampling, digging, and dog waste. In the LOD area and VSCAs, impacts on coastal dune vegetation would be long term, moderate, and adverse. However, designation of VSCAs could lead to greater compliance and reduced impacts in other (non-VSCA) areas of the site. While dogs would cause impacts on the dunes, most of the vegetation accessible to dogs under alternative F in the coastal dune habitat in Fort Funston is non-native; therefore, the impacts would not be considered greater than moderate adverse.

Assuming compliance, the preferred alternative would result in overall long-term minor to moderate adverse impacts on coastal dune habitat. The upland VSCA is located in previously disturbed coastal dune habitat that would continue to degrade, but the area in the VSCA is only a small portion of the entire site. Hardening the Chip Trail would also adversely affect coastal dune vegetation, but this area has been previously disturbed due to off-leash use on the entire site, especially around existing trails. Physically restraining dogs on leash would protect dune vegetation and reduce social trails at this site, but dog use would still limit potential restoration even though the habitat corridor would be protected.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. The permits could restrict use by time and area. Permits would be allowed for Fort Funston, but would be limited to the trails and VSCA areas south of the Fort Funston Trail (North). Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts on coastal dune vegetation would be expected from this user group. Impacts on coastal dune vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, minor to moderate, and adverse.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Fort Funston. The City of Daly City prepared the *Vista Grande Drainage Basin Improvement Project Draft EIR/EIS* to address storm-related flooding, reduce erosion along Lake Merced, and provide other potential benefits such as habitat enhancement and lake level augmentation (City of Daly City 2016, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Fort Funston. For example, the NPS is planning to construct new restroom and maintenance facilities at Fort Funston, which has the potential to have an adverse impact on vegetation in the area (NPS 2010d, 1). The Vista Grande portion of Daly City's stormwater collection system includes an underground collection system that routes storm flows northwest to the Vista Grande canal and tunnel for discharge to an outfall structure at the beach below Fort Funston (City of Daly City 2010b, 3). This system has the potential to adversely affect vegetation in the area of Fort Funston.

The long-term minor to moderate adverse impacts on the coastal dune plant community from dogs at Fort Funston under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of adverse and beneficial effects from actions in and around Fort Funston; when combined, these actions would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the coastal dune plant community from dogs under this alternative would be expected to be long term, minor to moderate, and adverse.

FORT FUNSTON PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation and reduce social trails; the upland VSCA supports dune vegetation that would be affected and limits potential restoration, although habitat corridor would be protected	Beneficial, assuming compliance	Long-term minor to moderate adverse cumulative impacts

IMPACTS TO COASTAL SCRUB, CHAPARRAL, AND GRASSLAND COMMUNITIES BY SITE AND ALTERNATIVE

Coastal scrub, chaparral, and grassland plant communities are found to some extent at many of the GGNRA sites considered in this final plan/EIS, but at the more developed sites in San Francisco County, only small remnants may be found (Crissy Field, Fort Point Promenade/Fort Point National Historic Site (NHS) Trails, Baker Beach and Bluffs to Golden Gate Bridge, Lands End). As a result, only impacts in largely undeveloped park sites containing intact acreage of coastal scrub/chaparral/grassland are analyzed. Because these three communities form a vegetation mosaic along the coast, they are discussed together in this section. In general, there is little site-specific documentation that dogs have either directly or indirectly affected coastal scrub/chaparral/grassland habitat at GGNRA. However, park staff have observed noncompliant dogs in unprotected areas due to ineffective or missing fencing. As described in chapter 3, the coastal scrub/chaparral/grassland communities provide habitat for many CNPS-listed plant species. Also occurring at the grasslands in this community is silver-leaf lupine, the primary host plant for the federally endangered mission blue butterfly; both species are discussed in more detail in the "Special-status Species" section.

MARIN COUNTY SITES

Homestead Valley

Alternative A: No Action. Under current conditions, dogs are allowed under voice control or on leash throughout the site. Even though this site has low visitor use (see table 10), physical damage and nutrient addition from dogs is assumed to be currently happening along the fire road/trails and in off-trail areas throughout the site. Due to their nature, dogs are not expected to stay on the fire road/trails. Since dogs are currently allowed under voice control at the site, there is a higher likelihood that dogs would go off trail than if they were on leash, creating impacts on vegetation communities in the adjacent, undisturbed areas located along the fire road/trails. Impacts on vegetation in these adjacent areas would include physical damage, and would create opportunities for invasive plants to establish. The creation of social trails could further affect the coastal scrub, chaparral, and grassland vegetation by increasing fragmentation. The Oakland mariposa lily occurs in the grasslands of Homestead Valley and is an example of a rare plant with limited distribution that could be susceptible to impacts from dog activities.

The impacts on vegetation at this park site under alternative A would be considered long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative A, no permit system exists for dog walking. At Homestead Valley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as the GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Homestead Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Homestead Valley.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Homestead Valley is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal scrub, chaparral, and grassland plant community by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the coastal scrub, chaparral, and grassland communities at or in the vicinity of Homestead Valley, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The long-term minor adverse impacts on the coastal scrub, chaparral, and grassland communities from dogs at Homestead Valley under alternative A were considered together with the effects of the actions mentioned above. The benefits to the coastal scrub, chaparral, and grassland communities from the park

stewardship programs and the interim permitting program would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the park stewardship programs combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts.

HOMESTEAD VALLEY ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Long-term, minor, adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Homestead Fire Road and on neighborhood connector trails (Homestead Trail and Homestead Summit Trail). In general, impacts on vegetation would be limited to the 6-foot corridors immediately adjacent to the trails/fire road. Impacts on vegetation could include physical damage from trampling as well as nutrient addition from dog waste and urine. Therefore, impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this area supports the growth of native vegetation, some of it rare, such as the Oakland mariposa lily. Impacts would be would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Homestead Valley would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking in Homestead Valley is uncommon, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as the GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Homestead Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Homestead Valley.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the coastal scrub, chaparral, and grassland communities at or in the vicinity of Homestead Valley, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on vegetation from dogs at Homestead Valley under alternative B were considered together with the effects of the projects mentioned above under. Cumulatively, alternative B would have negligible impacts on the coastal scrub/chaparral/grasslands at this site when added to the effects from these projects.

HOMESTEAD VALLEY ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and the impacts on coastal scrub/chaparral/grassland vegetation would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Homestead Valley is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on the vegetation at this park site would be the same as those under alternative B: negligible cumulative impacts on the coastal scrub, chaparral, and grassland communities.

HOMESTEAD VALLEY ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed only along the Homestead Fire Road; dogs would be prohibited in other areas of the site. Impacts on vegetation could include physical damage from trampling as well as nutrient addition from dog waste and urine. Impacts in areas adjacent to the fire road (LOD area) would be long term, minor, and adverse, since this habitat supports the growth of native vegetation, some of it

rare, such as the Oakland mariposa lily. Impacts would be would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Homestead Valley would be negligible, because impacts would result in no measurable or perceptible changes in these plant communities.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, no impact would occur as a result of commercial and permitted dog walking.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Homestead Valley under alternative D were considered together with the effects of the projects mentioned above under alternative B "Cumulative Impacts." Cumulatively, alternative D would have negligible impacts on the coastal scrub/chaparral/grassland communities at this site when added to the effects from these projects.

HOMESTEAD VALLEY ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and the impacts on vegetation would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Homestead Valley is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on the coastal scrub/chaparral/grassland communities at this park site would be the same as those under alternative B: negligible cumulative impacts on the coastal scrub/chaparral/grassland communities.

HOMESTEAD VALLEY ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on Homestead Fire Road and on neighborhood connector trails (Homestead Trail, Homestead Summit Trail, and Eagle Trail). In general, impacts on vegetation would be limited to the 6-foot corridors immediately adjacent to the trails/fire roads. Impacts on vegetation could include physical damage from trampling, as well as nutrient addition from dog waste and urine. Therefore, impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse, since this habitat supports the growth of native vegetation, some of it rare, such as the Oakland mariposa lily. Impacts would be would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Homestead Valley would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Homestead Valley is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as the GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Homestead Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Homestead Valley, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Homestead Valley under the preferred alternative were considered together with the effects of the projects mentioned above. Cumulatively, the preferred alternative would have negligible impacts on the coastal scrub/chaparral/grassland communities at this site when added to the effects from these projects.

HOMESTEAD VALLEY PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alta Trail/Orchard Fire Road/Pacheco Fire Road

Alternative A: No Action. Under current conditions, dogs are allowed under voice control or on leash on the trails and roads from Marin City to Oakwood Valley. These areas experience high use by commercial dog walkers (table 10), with typically 5 to 12 dogs under voice control per commercial walker.

Under alternative A, physical damage to vegetation from dogs through trampling, digging, and dog waste would continue to occur since dogs would be allowed under voice control and there is a higher likelihood of dogs going off the trail and fire roads than if they were on leash. Continued impacts in these areas could prevent the growth of vegetation or allow the establishment of non-native invasive species. These impacts would be considered long term, minor, and adverse due to the high use by commercial dog walkers and because effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for dog walking under alternative A. However, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road is common, with commercial dog walkers having 5 to 12 dogs under voice control at one time. Commercial dog walking would continue to create long-term minor adverse impacts on vegetation, as described above. Dogs under voice control would continue to disturb the vegetation through digging, trampling, and dog waste.

Cumulative Impacts. Projects and actions in and near Alta Trail, Orchard Fire Road, and Pacheco Fire Road were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail/Orchard Fire Road/Pacheco Fire Road.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road is common, often with 5 to 12 dogs per dog walker. Therefore, the interim compendium amendment would have a beneficial effect on coastal scrub, chaparral, and grassland plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage, digging, and dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Alta Trail/Orchard Fire Road/Pacheco Fire Road, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts

The long-term minor adverse impacts on the coastal scrub, chaparral, and grassland communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the park stewardship programs and other restoration projects in the area and the interim permitting program of this

site would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the park stewardship programs and other restoration projects combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Long-term, minor, adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Alta Trail to Orchard Fire Road and on Orchard and Pacheco fire roads. Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this habitat supports the growth of native vegetation, some of it rare. Impacts on vegetation could include physical damage from trampling as well as nutrient addition from dog waste and urine. Impacts would be detectable, but not large enough to cause a measurable or perceptible change in the coastal scrub/chaparral/grassland communities.

The long-term minor adverse impacts from the high level of dog use in the LOD area would occur in a relatively reduced area compared to the site as a whole. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking on the Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on vegetation from dogs at the site. Overall impacts on vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Projects and actions in and near Alta Trail, Orchard Fire Road, and Pacheco Fire Road were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), could also beneficially affect vegetation at GGNRA park sites such as Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Alta Trail, Orchard Fire Road, and Pacheco Fire Road, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub, chaparral, and grassland communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative B were considered together with the effects of the actions mentioned above. The benefits to vegetation from the park stewardship programs and other restoration projects in the area of this site combined with the negligible impacts from alternative B would result in negligible cumulative impacts.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits may restrict use by time and area. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road. Impacts on vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on vegetation would be expected from this user group. Impacts on vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Under alternative C, the cumulative impacts on the coastal scrub/chaparral/grassland communities at this park site would be the same as those under alternative B: negligible cumulative impacts on the coastal scrub/chaparral/grassland communities.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impact on vegetation from dogs would occur at this site.

Dogs would not be allowed at Alta Trail, Orchard Fire Road, and Pacheco Fire Road; therefore, there would be no impact from commercial dog walkers on the coastal scrub, chaparral, and grassland vegetation communities.

Cumulative Impacts. The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative D was considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the park stewardship programs and other restoration projects combined with the lack of impacts on the coastal scrub/chaparral/grassland communities from alternative D would result in beneficial cumulative impacts.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Alta Trail to the junction with the Morning Sun Trail, and on Orchard and Pacheco fire roads. While the mileage open to dog walking would be greater than that described for alternative B, the impacts would be similar, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits could restrict use by time and area. Permits would be allowed for Alta Trail. Although dog walkers with three or fewer dogs would be able to go as far as the intersection of Alta and Morning Sun Trails, permit holders would be allowed only as far as the Orchard Fire Road. Impacts on vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on vegetation would be expected from this user group. Impacts on vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible impacts on the coastal scrub, chaparral, and grassland communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative E were considered together with the effects of the actions mentioned above in alternative B. The benefits to vegetation from the park stewardship programs and other restoration projects in the area of this site combined with the negligible impacts from alternative E would result in negligible cumulative impacts.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative E, allowing on-leash dog walking on the Alta Trail to the junction with the Morning Sun Trail and on Orchard and Pacheco fire roads for dog walkers with up to three dogs. Permit holders would be allowed only as far as the Orchard Fire Road. Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this habitat supports the growth of native vegetation, some of it rare. Impacts on vegetation could include physical damage from trampling as well as nutrient addition from dog waste and urine. Impacts would be detectable, but not large enough to cause a measurable or perceptible change in the coast scrub/chaparral/grassland plant communities.

The long-term minor adverse impacts from the high level of dog use in the LOD area would occur in a relatively reduced area compared to the site as a whole. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking on the Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits could restrict use by time and area. Permits would be allowed for Alta Trail from Donahue Street to the intersection with Orchard Trail. Impacts on vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on vegetation would be expected from this user group. Impacts on vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Projects and actions in and near Alta Trail, Orchard Fire Road, and Pacheco Fire Road were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Alta Trail, Orchard Fire Road, and Pacheco Fire Road, such as development or construction actions at or in the vicinity of GGNRA sites. Coastal scrub habitat in

California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub, chaparral, and grassland communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under the preferred alternative were considered together with the effects of the actions mentioned above. The benefits to vegetation from the park stewardship programs and other restoration projects in the area of this site combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on the coastal scrub, chaparral, and grassland communities.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Oakwood Valley

Alternative A: No Action. Currently, dogs are allowed under voice control on Oakwood Valley Fire Road and on Oakwood Valley Trail from the junction with the fire road to the junction with Alta Trail. On-leash dog walking is allowed on Oakwood Valley Trail from the trailhead to the junction with Oakwood Valley Fire Road. These areas experience moderate use by hikers, runners, bicyclists, and horseback riders and moderate use by dog walkers (table 10). In addition, this area contains mission blue butterfly habitat and host plants.

Under alternative A, physical disturbance from dog activities would continue to occur along the fire road and trail and in off-trail areas throughout the site. Due to their nature, dogs are not expected to stay on the fire road/trail. Since dogs would be allowed under voice control in some areas of the site, there is a higher likelihood that dogs would go off trail than if they were on leash, creating impacts on coastal scrub, chaparral, and grassland vegetation in adjacent areas. Therefore, these impacts would be considered long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for dog walking under alternative A. At Oakwood Valley, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Oakwood Valley.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Oakwood Valley is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal scrub, chaparral, and grassland plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Oakwood Valley, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Oakwood Valley under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the park stewardship programs and other restoration projects in the area of this site and the interim permitting program would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the park stewardship programs and other restoration projects combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts.

OAKWOOD VALLEY ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Long-term, minor, adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed on the Oakwood Valley Fire Road and the Oakwood Valley Trail to the junction of the trail and fire road in the lower section of the site. No dogs would be allowed above the junction of the fire road and trail. Impacts in areas adjacent to the trail would be long term, minor, and adverse since these areas support existing vegetation that would be affected by trampling and dog waste. Impacts on vegetation would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers.

Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Oakwood Valley.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Oakwood Valley, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Oakwood Valley under alternative B were considered together with the effects of the projects mentioned above. Cumulatively, alternative B would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

OAKWOOD VALLEY ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C proposes a VSCA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with continuous fencing to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to a new gate at the junction with Alta Trail. Dogs under voice and sight control in the VSCA on the Oakwood Valley Fire Road would have access to the land between the edge of the trail and the fence (LOD area). The vegetation in this area would be affected by physical disturbance from dog activities. Dogs in the VSCA would be confined to a smaller area, potentially increasing the impacts on the adjacent natural habitat and vegetation. There is also a potential for an increase in nutrient loading from dog waste due to having more dogs confined to a smaller area directly adjacent to natural habitat. Dogs would affect vegetation in the LOD area of the on-leash portion of Oakwood Valley Trail as well. Impacts would result from physical disturbance, such as trampling, digging, and dog waste. Impacts on vegetation in the LOD area and in the VSCA would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area and VSCA would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation

off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Oakwood Valley under alternative C were considered together with the effects of the projects mentioned above under alternative B. Cumulatively, alternative C would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

OAKWOOD VALLEY ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the Oakwood Valley Fire Road and Oakwood Valley Trail to the junction of the fire road and trail. Impacts in areas adjacent to the fire road would be long term, minor, and adverse since these areas support existing vegetation that would be affected by trampling and dog waste. The impacts from dogs would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on vegetation from on-leash dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the coastal scrub/chaparral/grassland plant communities.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Oakwood Valley under alternative D were considered together with the effects of the projects mentioned above under alternative B. Cumulatively, alternative D would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

OAKWOOD VALLEY ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; the fire road and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E proposes a VSCA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with noncontinuous fencing where needed to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to the junction with Alta Trail. Impacts would be the same as those under alternative C, assuming compliance: long term, minor, and adverse in the LOD area and VSCA and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on the coastal scrub/chaparral/grassland communities at this park site would be the same as those under alternative C: negligible cumulative impacts.

OAKWOOD VALLEY ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and LOD areas and VSCAs are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Oakwood Valley Fire Road and on the Oakwood Valley Trail from the junction with the fire road to the junction with the Alta Trail. On-leash dog walking would also be allowed on the short segment of the Rhubarb Trail, which allows visitors from the Tennessee Valley Road community to access to the Oakwood Valley Fire Road without having to drive there. Dogs would affect vegetation in the LOD area of the on-leash portion of Oakwood Valley Fire Road and Trail. Impacts in areas adjacent to the trail would be long term, minor, and adverse since these areas support existing vegetation that would be affected by trampling and dog waste. Impacts on vegetation would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from

on-leash dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Oakwood Valley.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Oakwood Valley, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Oakwood Valley under the preferred alternative were considered together with the effects of the projects mentioned above. Cumulatively, the preferred alternative would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

OAKWOOD VALLEY PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Marin Headlands Trails

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed along the Coastal Trail from Hill 88 to Muir Beach, the Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, and Marin Drive. Dog walking under voice control (or on leash) is allowed along other portions of the Coastal Trail (Golden Gate Bridge to Hill 88, including portions of the Lagoon Loop Trail); the Coastal, Wolf Ridge, and Miwok Trail Loop; and the Old Bunker Fire Road Loop (includes a section of the Coastal Trail). These trails experience low to moderate use by dog walkers. The Marin Headlands Trails area contains diverse habitat, including coastal scrub, serpentine

coastal scrub, chaparral, grassland, and mission blue butterfly habitat and host plants; there are large tracts of coastal scrub habitat in the Marin Headlands Trails that extend north into Muir Beach. Physical disturbance and nutrient addition are currently happening along the trails and fire roads and in off-trail areas throughout the site due to unleashed dogs. In general, in larger tracts such as the Marin Headlands Trails, more dog walkers and their dogs would be concentrated at the trailheads, and the ability of dog walkers to disperse provides a dilution that would actually spread impacts to a greater area or throughout the site. At trailheads and other congregating areas, in addition to physical damage, scent marking and dog waste by dogs can cause alteration of habitat conditions as well as furthering the spread of invasive plant species. Due to their nature, dogs are not expected to stay on the fire roads/trails.

Since dogs would be allowed under voice control in portions of the site under alternative A, there is a higher likelihood that dogs would go off trail than if they were on leash, thus affecting vegetation in adjacent undisturbed areas. Therefore, impacts on coastal scrub/chaparral/grassland vegetation as a result of this alternative would continue to be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative A, no permit system exists for dog walking. At the Marin Headlands Trails, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Marin Headlands Trails is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal scrub, chaparral, and grassland plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and nutrient addition from dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Marin Headlands Trails, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The long-term minor adverse impacts on the coastal scrub community from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the park stewardship programs and other restoration projects in the area of this site and the interim permitting program would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the park stewardship programs and other

restoration projects combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts on the coastal scrub community.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs on the trails at the Marin Headlands Trails. Not allowing dog walking on the Marin Headlands Trails would eliminate physical disturbance by dogs and nutrient addition from dog waste. Therefore, assuming compliance, alternative B would result in no impact on coastal scrub/chaparral/grassland vegetation at the site.

Since dogs would not be allowed at the Marin Headlands Trails, there would be no impact from commercial dog walkers on the coastal scrub/chaparral/grassland vegetation communities.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Marin Headlands Trails, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs at the Marin Headlands Trails under alternative B was considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other restoration projects combined with the lack of impacts on the coastal scrub/chaparral/grassland communities from alternative B would result in beneficial cumulative impacts.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor. This corridor extends from the Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via North Lagoon Loop Trail, a section of the Miwok Trail, and the Rodeo Valley Trail, and includes the connector trail from the Rodeo Valley Trail to the Smith Road Trailhead. On-leash dog walking would also be allowed on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), and the Batteries Loop Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands Trails, while preserving and maintaining the integrity of interior habitat. Impacts in areas adjacent to the trails/fire roads would be long term, minor, and adverse since this vegetation would be affected by trampling and dog waste. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under alternative C, permits would not be issued at Marin Headlands Trails allowing dog walkers to have more than three dogs. Since commercial dog walking is not common on Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at the Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above under alternative B. Cumulatively, alternative C would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B (dogs would be prohibited on the trails); therefore, no impact on coastal scrub/chaparral/grassland vegetation would occur as a result of alternative D, assuming compliance.

Since dogs would not be allowed at the Marin Headlands Trails, there would be no impact from commercial dog walkers on the coastal scrub/chaparral/grassland vegetation communities.

Cumulative Impacts. Under alternative D, the cumulative impacts on the coastal scrub/chaparral/grassland communities at this park site would be the same as those under alternative B: beneficial cumulative impacts.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Conzelman Coastal Trail from Highway 101 to the McCullough intersection and then to the Coastal Trail Bike Route, including Julian Road, to Rodeo Beach parking lot. On-leash dog walking would also be available on the Old Bunker Fire Road Loop (which includes a section of the Coastal Trail), the Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, Marin Drive, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. The impacts in areas adjacent to the trails/fire roads (LOD area) would be long term, minor, and adverse since vegetation in these areas would be affected by trampling and dog waste. Nutrient addition from dog waste may also occur as a result of runoff, which could also affect the coastal scrub/chaparral/grassland plant communities. Even though alternative E would allow more dog access at the site, the difference in dog use between alternatives E and C is not considered large enough to cause a change in the intensity of the impact relative to the area of the site. Impacts on vegetation would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Although more trails would be available to dogs in alternative E compared to alternative C, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking would be the same. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under alternative E, permits would not be issued at Marin Headlands Trails allowing dog walkers to have more than three dogs. Since commercial dog walking activity is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at the Marin Headlands Trails under alternative E were considered together with the effects of the projects mentioned above under alternative B. Cumulatively, alternative E would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, extending from the Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via the North Lagoon Loop Trail, a section of the Miwok Trail, and the Rodeo Valley Trail. The corridor includes the connector trail from Rodeo Valley Trail to the Smith Road trailhead. On-leash dog walking would also be available on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), the Batteries Loop Trail, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. Impacts in areas adjacent to the trails/fire roads would be long term, minor, and adverse since this vegetation would be affected by trampling and dog waste. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under the preferred alternative, permits would be issued allowing dog walkers to have more than three dogs on a short segment of the North Lagoon Loop Trail. Allowing dog walkers with more than three dogs on the North Lagoon Loop Trail from the Rodeo Beach parking lot to the pedestrian bridge creates a loop with the permitted areas allowed under the preferred alternative for Rodeo Beach. Since commercial dog walking activity is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Marin Headlands Trails, such as development or construction actions.

Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at the Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. Cumulatively, the preferred alternative would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Fort Baker

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed throughout Fort Baker except on the Chapel Trail or the pier, where dogs are not allowed. This site experiences moderate visitor use and low dog walking use. Documented leash law violations at this site totaled 52 from 2008 through 2011 and an additional 29 from 2012 to 2016 (tables 18a and 18b). Drown Fire Road, lined by post and cable fencing, traverses natural habitat where extensive mission blue butterfly habitat restoration has occurred. Battery Yates Trail also has mission blue butterfly habitat that is partially fenced (post and cable), but this fencing, similar to that along Drown Fire Road, does not physically exclude dogs. Dogs have been observed off leash at the Parade Ground, Drown Fire Road, Battery Yates Trail, and behind the Bay Area Discovery Museum. Dogs on leash have access to areas adjacent to the trails/fire roads, where viable plant communities exist. Impacts on this vegetation would include physical disturbance through trampling and digging, as well as nutrient addition, which would prevent the growth of new vegetation. Since compliance is an issue at this site, it is likely that many dogs are off leash and go beyond the trails and fire roads. Runoff of nutrients from trails into the adjacent habitat may result in some changes in soil nutrient levels, which could also affect plant communities.

Under alternative A, long-term minor adverse impacts on coastal scrub, chaparral, and grassland vegetation would continue to occur at Fort Baker.

No permit system exists for dog walking under alternative A. At Fort Baker, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance.

Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Fort Baker.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Fort Baker is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal scrub, chaparral, and grassland plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Fort Baker, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Fort Baker under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the park stewardship programs and other restoration projects in the area of this site and the interim permitting program would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the park stewardship programs and other restoration projects combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts on the coastal scrub, chaparral, and grassland communities.

FORT BAKER ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Long-term, minor, adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Drown Fire Road (which traverses natural habitat where extensive mission blue butterfly habitat restoration has occurred), the Bay Trail (not including Battery Yates Trail), Vista Point Trail (to be built), the Lodge/Conference Center Grounds, and the Parade Ground. The impacts in the LOD area under alternative B would be the same as alternative A: long term, minor, and adverse. The impacts would result from physical disturbance from trampling as well as nutrient addition, which would prevent the growth of new vegetation. The effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub, chaparral, and grassland vegetation

from on-leash dog walking at Fort Baker would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/ grassland vegetation.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Fort Baker.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Fort Baker, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dog activities at Fort Baker under alternative B were considered together with the effects of the projects mentioned above. Cumulatively, alternative B would have negligible impacts on the coastal scrub, chaparral, and grassland communities at this site when added to the effects from these projects.

FORT BAKER ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, except for the addition of on-leash dog walking on the Battery Yates Trail (supports protection of sensitive mission blue butterfly habitat). Long-term minor adverse impacts on the coastal scrub/chaparral/grassland vegetation in areas adjacent to the trail (6-foot corridor or LOD area) would occur as a result of this alternative because mission blue butterfly habitat is present along on-leash dog walking areas and would result in perceptible changes in the habitat.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail outside the LOD. Assuming compliance, the overall impacts on coastal scrub, chaparral, and grassland

vegetation from on-leash dog walking at Fort Baker would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash at Fort Baker (excluding Drown Fire Road), with a limit of six dogs; permits could restrict use by time and area. Impacts on coastal scrub/chaparral/grassland vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on the coastal scrub/chaparral/ grassland communities at this site would be the same as those under alternative B: negligible cumulative impacts.

FORT BAKER ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the grounds of the Lodge/Conference Center, Bay Trail (not including Battery Yates Trail), and Vista Point Trail (to be built). Impacts in areas adjacent to the trail would be long term, minor, and adverse since these areas support existing vegetation that would be affected by trampling and dog waste. Impacts would not be large enough to create a measureable or perceptible change in the coastal scrub/chaparral/grassland plant communities. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Even though alternative D would allow less dog access at the site, the difference in dog impacts between alternatives D and B is not considered large enough to cause a change in the intensity of the impact, because of the developed nature of the site.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub, chaparral, and grassland vegetation from on-leash dog walking at Fort Baker would be negligible.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dog activities at Fort Baker under alternative D were considered together with the effects of the projects mentioned above under alternative B. Cumulatively, alternative D would have negligible impacts on the coastal scrub, chaparral, and grassland communities at this site when added to the effects from these projects.

FORT BAKER ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; the trail and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash at Fort Baker (excluding Drown Fire Road), with a limit of six dogs; permits could restrict use by time and area. Impacts on coastal scrub/chaparral/grassland vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on the coastal scrub/chaparral/ grassland communities at this site would be the same as those under alternative C: negligible cumulative impacts.

FORT BAKER ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Bay Trail, the Lodge/Conference Center Grounds, the Parade Ground, Fort Baker Trail between Sommerville Road and East Road, and the parking lots at the Bay Area Discovery Museum and connecting trails. The impacts in the LOD area would be long term, minor, and adverse. The impacts would result from physical disturbance from trampling as well as nutrient addition, which would prevent the growth of new vegetation. The effects would be measurable and perceptible, but would be localized in a relatively small area. Further, by eliminating dog walking on Drown Fire Road and Battery Yates Trail, the preferred alternative would protect mission blue butterfly habitat.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on vegetation from on-leash dog walking at Fort Baker would be negligible because impacts would result in no measurable or perceptible changes in the coastal scrub/chaparral/grassland plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash at Fort Baker. Walking four to six dogs with an NPS-issued permit would be allowed in all of the same areas except the lands and trails surrounding the Cavallo Point Lodge. Permits could further restrict use by time and area. Impacts on coastal scrub/chaparral/grassland vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Fort Baker.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Fort Baker, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The overall negligible impacts on the coastal scrub/chaparral/grassland communities from dog activities at this site under the preferred alternative were considered together with the effects of the projects mentioned above. Cumulatively, the preferred alternative would have negligible impacts on the coastal scrub, chaparral, and grassland communities at this site when added to the effects from these projects.

FORT BAKER PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

SAN FRANCISCO COUNTY SITES

Baker Beach and Bluffs to Golden Gate Bridge

Alternative A: No Action. Under current conditions, dogs are allowed under voice control on the beach north of Lobos Creek, with on-leash dog walking required for trails leading to the beach; however, social trails exist at the site and traverse sensitive coastal scrub/chaparral/grassland habitat. This site has documented low to moderate visitor use (depending on weather, holidays, and weekend use) and dog walking use is also considered low to moderate (table 10). Baker Beach and Bluffs to Golden Gate Bridge

supports plant communities in the following habitats: coastal scrub, chaparral, serpentine outcroppings, serpentine scrub, and serpentine grassland. The unique vegetation that grows in serpentine soils includes several threatened and endangered plants and is particularly sensitive to changes in soil properties.

Under alternative A, continued impacts on vegetation would be long term, minor, and adverse, and would include physical disturbance through trampling and digging, as well as nutrient addition; effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for dog walking under alternative A. At Baker Beach and Bluffs to Golden Gate Bridge, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate Bridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Baker Beach and Bluffs to Golden Gate Bridge. Between August and November of 2007, 73,000 tons of landfill debris was unearthed by excavators at Baker Beach and Bluffs to Golden Gate Bridge and conveyed to the top of the cliffs as part of a remediation and restoration effort (Presidio Trust 2010a). The Lobos Creek Valley dune restoration near Baker Beach and Bluffs to Golden Gate Bridge restored the coastal scrub and helped increase the population of the listed San Francisco lessingia (NPS 2010c, 1; SFGATE 2010,1)). The PTMP was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). Management objectives in the PTMP that are applicable to vegetation include identifying and protecting sensitive wildlife species, and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forest is being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on vegetation at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Baker Beach and Bluffs to Golden Gate Bridge is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal scrub, chaparral, and grassland plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs, the PTMP, the dune restoration project, and the interim permitting program should reduce some of the adverse impacts on vegetation from alternative A. Therefore, cumulative impacts on the coastal scrub/ chaparral/grassland communities under this alternative would be expected to be negligible.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dog walking on the Batteries to Bluffs Trail and the Battery Crosby Trail, but would allow on-leash dog walking on all other trails all the way to the Golden Gate Bridge in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge, as well as on the entire beach within the GGNRA boundary. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Impacts would affect the plants that grow in the serpentine soils immediately adjacent to the Coastal Trail. Therefore, impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since these areas support the growth of existing vegetation; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would affect only a portion of the site. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not affect the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat, and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate Bridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Baker Beach and Bluffs to Golden Gate Bridge. Between August and November of 2007, 73,000 tons of landfill debris was unearthed by excavators at Baker Beach and

Bluffs to Golden Gate Bridge and conveyed to the top of the cliffs as part of a remediation and restoration effort (Presidio Trust 2010a). The Lobos Creek Valley dune restoration near Baker Beach and Bluffs to Golden Gate Bridge restored the coastal scrub and helped increase the population of the listed San Francisco lessingia (NPS 2010c, 1; SFGATE 2010,1)). The PTMP was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). Management objectives in the PTMP that are applicable to vegetation include identifying and protecting sensitive wildlife species and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forest is being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on vegetation at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative B were considered together with the beneficial effects from the park stewardship programs, the PTMP, and the dune restoration project, as described above. Cumulatively, alternative B would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits could restrict use by time and area. Permits would be allowed for Baker Beach. Impacts on coastal scrub/chaparral/grassland vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on the coastal scrub/chaparral/ grassland communities would be the same as those under alternative B: beneficial.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking on the section of Baker Beach south of the north parking lot and on all trails leading to that section of beach, as well as on the Coastal Trail. Dogs would be prohibited in the section of beach north of the north parking lot (approximately half of the beach) and on the trails leading to the northern section of the beach. The beach does not contain coastal scrub, chaparral, or grassland habitat. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Impacts would affect the plants that grow in the serpentine soils immediately adjacent to the Coastal Trail. Therefore, impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since these areas support the growth of existing vegetation; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would affect only a portion of the site. Physically restraining dogs would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible.

No commercial dog walking would be allowed, and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative D were considered together with the beneficial effects from the park stewardship programs, the PTMP, and the dune restoration project, described under alternative B. Cumulatively, alternative D would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the northern portion of the beach and on all trails except the Batteries to Bluffs Trail and the Battery Crosby Trail. A VSCA would be established on the portion of the beach south of the

north parking lot. The beach does not contain coastal scrub, chaparral, or grassland habitat. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Impacts would affect the plants that grow in the serpentine soils immediately adjacent to the Coastal Trail. Therefore, impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since these support the growth of existing vegetation; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would affect only a portion of the site. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on vegetation from dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed for Baker Beach. Impacts on coastal scrub/chaparral/grassland vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/ chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative E were considered together with the beneficial effects from the park stewardship programs, the PTMP, and the dune restoration project, as described under alternative B. Cumulatively, alternative E would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site; the VSCA is located on the beach, not in coastal scrub/ chaparral/grassland habitat	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the section of Baker Beach north of Baker Beach Access Trail #2 and on the beach access trails leading to that section of beach, as well as on the Coastal Trail. Dogs would be prohibited in the section of beach south of the north parking lot (approximately half of the beach) and on the trails leading to the southern section of the beach, and on the Dune, Batteries to Bluffs, and Battery Crosby trails. The beach does not contain coastal scrub, chaparral, or grassland habitat. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Impacts would affect the plants that grow in the serpentine soils immediately adjacent to the Coastal Trail. Therefore, impacts in areas adjacent to the trail (LOD area)

would be long term, minor, and adverse since these areas support the growth of existing vegetation; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would affect only a portion of the site. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. At Baker Beach, walking four to six dogs with an NPS-issued permit would be limited to the north parking lot, Baker Beach Access Trail #2, and the beach north of the trail. Permits could further restrict use by time and area. Impacts on coastal scrub/chaparral/grassland vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/ grassland vegetation.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites, such as Baker Beach and Bluffs to Golden Gate Bridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Baker Beach and Bluffs to Golden Gate Bridge. Between August and November of 2007, 73,000 tons of landfill debris was unearthed by excavators at Baker Beach and Bluffs to Golden Gate Bridge and conveyed to the top of the cliffs as part of a remediation and restoration effort (Presidio Trust 2010a). The *Lobos Creek Valley Dune Restoration* near Baker Beach and Bluffs to Golden Gate Bridge restored the coastal scrub and helped increase the population of the listed San Francisco lessingia (NPS 2010c, 1; SFGATE 2010, 1). As stated previously, the PTMP identifies and protects sensitive wildlife species, and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forest is being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on vegetation at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Baker Beach and Bluffs to Golden Gate Bridge under the preferred alternative were considered together with the beneficial effects from the park stewardship programs, the PTMP, and the dune restoration project.

Cumulatively, the preferred alternative would have beneficial impacts on the coastal scrub/chaparral/ grassland communities at this park site when added to the beneficial effects from these projects.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Lands End

Alternative A: No Action. Under current conditions, dogs are allowed under voice control at the Lands End site, which includes the Lands End Coastal Trail and the El Camino del Mar Trail. This site has moderate visitor use by hikers, bicyclists, and dog walkers and low to moderate use by dog walkers (table 10). Lands End contains coastal scrub, chaparral, and serpentine coastal scrub vegetation. Off-leash dog activities would contribute to physical disturbance of these communities and nutrient addition in off-trail areas occurs throughout the site. Due their nature, dogs are not expected to stay on the trails. Since dogs are currently allowed under voice control at the site, there is a higher likelihood that dogs would go off trail than if they were on leash, creating impacts on vegetation in the adjacent, undisturbed areas located along the trails. Impacts in these areas would include trampling and digging, as well as the addition of nutrients to the soil, which would impact vegetation. The Lands End area also contains rare serpentine soils that support sensitive plant species, but no threatened or endangered plants.

Therefore, impacts on vegetation would continue to be long term, minor to moderate, and adverse under alternative A because effects would be measurable and perceptible, potentially over a relatively large area, and may affect the overall integrity of the plant communities at the site.

Under alternative A, no permit system exists for dog walking. At Lands End, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on coastal scrub/chaparral/ grassland vegetation.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils and vegetation. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Lands End. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Lands End. The efforts of park stewardship programs at Lands End have included resurfacing and stabilizing segments of the trails, eliminating social trails, replanting native species in the local forest and surrounding areas, and engaging the community in park stewardship (GGNPC 2010c, 1).

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Lands End is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal scrub, chaparral, and grassland plant communities by limiting the number of

dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Lands End, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The long-term minor to moderate adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Lands End under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and the interim permitting program should reduce some of the adverse impacts on the coastal scrub, chaparral, and grassland communities from alternative A. Therefore, cumulative impacts on the coastal scrub/chaparral/grassland communities under this alternative would be expected to be negligible to long term, minor, and adverse.

LANDS END ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking at Lands End on the El Camino del Mar Trail, Lands End Coastal Trail, and connecting steps, where much of the coastal scrub/chaparral habitat occurs. In general, impacts would be limited to the 6-foot LOD corridors immediately adjacent to the trails. Vegetation would be affected through physical disturbance such as trampling and dog waste. The Lands End area also contains rare serpentine soils, which support unique vegetation; this vegetation is particularly sensitive to changes in soil properties. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Therefore, impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation and because effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts on vegetation adjacent to the trails would occur in a relatively small area compared to the site as a whole, and Lands End receives low to moderate use by dog walkers. Also, physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation at Lands End would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Lands End, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/ grassland vegetation at Lands End.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils and vegetation. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Lands End. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Lands End. The efforts of park stewardship programs at Lands End have included resurfacing and stabilizing segments of the trails, eliminating social trails, replanting native species in the local forest and surrounding areas, and engaging the community in park stewardship (GGNPC 2010c, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Lands End, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Lands End under alternative B were considered together with the beneficial effects of the park stewardship programs, described above. Cumulatively, alternative B would have beneficial impacts on the coastal scrub/ chaparral/grassland communities at this park site when added to the beneficial effects from these actions.

LANDS END ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would be the same as alternative B, thus impacts would be limited to the 6-foot LOD corridors immediately adjacent to the trails. Vegetation would be affected through physical disturbance such as trampling and dog waste. The Lands End area also contains rare serpentine soils, which support unique vegetation; this vegetation is particularly sensitive to changes in soil properties. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Therefore, impacts in the LOD area would be long term, minor and adverse and would result from physical disturbance; effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts on coastal scrub/chaparral/grassland vegetation would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail, and Lands End receives low to moderate use by dog walkers. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation at Lands End would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Lands End is not one of the GGNRA sites where permits to walk more than three dogs would be issued. Since commercial dog walking is not common at Lands End, it is

likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Lands End under alternative C were considered together with the effects of the projects mentioned above in alternative B. Cumulatively, alternative B would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these actions.

LANDS END ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking on the El Camino del Mar Trail, and on the Lands End Coastal Trail as far as the junction with, and on the connector trail/steps leading to the El Camino del Mar Trail. The impacts would be similar to those under alternative B because the on-leash areas coincide with the coastal scrub/chaparral/grassland habitat of Lands End. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails. Vegetation would be affected through physical disturbance such as trampling and dog waste. The Lands End area also contains rare serpentine soils, which support unique vegetation; this vegetation is particularly sensitive to changes in soil properties. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Therefore, impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation and because effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts on vegetation in the land adjacent to the trails would occur in a relatively small area compared to the site as a whole, and Lands End receives low to moderate use by dog walkers. Also, physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation at Lands End would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Lands End under alternative D were considered together with the beneficial effects of the park stewardship programs, as described under alternative B. Cumulatively, alternative D would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these actions.

LANDS END ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Lands End is not one of the GGNRA sites where permits to walk more than three dogs would be issued. Since commercial dog walking is not common at Lands End, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/ grassland vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on the coastal scrub/chaparral/ grassland communities at this park site would be the same as those under alternative B: beneficial cumulative impacts.

LANDS END ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative B, allowing on-leash dog walking on the El Camino del Mar Trail, Lands End Coastal Trail, and the connecting steps, where much of the coastal scrub/chaparral habitat occurs. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails. Vegetation would be affected through physical disturbance such as trampling and dog waste. The Lands End area also contains rare serpentine soils, which support unique vegetation; this vegetation is particularly sensitive to changes in soil properties. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Therefore, impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation and because effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts on coastal scrub/chaparral/grassland vegetation adjacent to the trails would occur in a relatively small area compared to the site as a whole, and Lands End receives low to moderate use by dog walkers. Also, physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation at Lands End would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Lands End is not one of the GGNRA sites where permits to walk more than three dogs would be issued. Since commercial dog walking is not common at Lands End, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/ chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils and vegetation. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Lands End. GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Lands End. The efforts of park stewardship programs at Lands End have included resurfacing and stabilizing segments of the trails, eliminating social trails, replanting native species in the local forest and surrounding areas, and engaging the community in park stewardship (GGNPC 2010c, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Lands End, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Lands End under the preferred alternative were considered together with the beneficial effects of the park stewardship programs. Cumulatively, the preferred alternative would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

LANDS END PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

SAN MATEO COUNTY SITES

Mori Point

Alternative A: No Action. Mori Point contains coastal scrub habitat and grasslands that are dominated by purple needlegrass. On-leash dog walking is currently allowed on all trails and on the portion of beach owned by the NPS. This site has moderate to high visitor use by dog walkers, as well as visitors that frequent the area for activities such as walking, running, and biking. The NPS has invested time and money in extensive restoration projects at Mori Point, and the impacts from dogs are negating the benefits of these restoration projects.

Under alternative A, dogs would continue to affect vegetation at Mori Point through digging, trampling, and nutrient addition. In addition, some dogs under voice control may go off trail into adjacent, undisturbed areas and impact vegetation in these areas. Therefore, impacts on vegetation as a result of this alternative would continue to be long term, minor, and adverse at this site because effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for dog walking under alternative A. At Mori Point, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on coastal scrub/chaparral/ grassland vegetation.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of vegetation communities at park sites such as Mori Point. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Mori Point. The *Mori Point Restoration and Trail Plan* preserved and restored habitat by reducing threats to native plant communities and natural processes, provided habitat connectivity between upland and wetland areas, and developed a safe and sustainable trail system which improved recreational experiences and reduced impacts on park resources (NPS 2010e, 1, GGNPC 2016, 1). The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica (Sharp Park, located near Mori Point), and addresses dog walking (including on-leash dog walking and off-leash DPAs) in this area (SFPD 2011, 261-262). Project activities included in the SNRAMP, including the restoration of the Laguna Salada at Sharp Park would protect and improve habitat and provide long-term beneficial impacts to vegetation.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Mori Point, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and from the *Mori Point Restoration and Trail Plan* should reduce some of the adverse impacts on the coastal scrub, chaparral, and grassland communities from alternative A. Therefore, cumulative impacts on the coastal scrub/chaparral/grassland communities under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste, and these effects would continue to negate restoration efforts	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Mori Coastal Trail and the portion of beach owned by the NPS, but dogs would not be allowed on the Pollywog Trail, which is located adjacent to the ponds. The Mori Coastal Trail, where on-leash dog walking is allowed, winds through coastal scrub and grassland habitats. The vegetation in the areas adjacent to the trail would be affected by dogs through trampling and dog waste. The impacts in the LOD area caused by dog activities would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Compared to the size of the Mori Point site, the areas of coastal scrub/chaparral/grassland vegetation that could be impacted by on-leash dog walking are small. Additionally, physically restraining dogs on leash would protect vegetation off trail at the site. Therefore, assuming compliance, the overall impacts on the coastal scrub and grassland vegetation under alternative B would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/ grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Mori Point under alternative B were considered together with the beneficial effects of the park stewardship programs and the *Mori Point Restoration and Trail Plan*, as described under alternative A. Cumulatively, alternative B would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking on the Mori Coastal Trail, Old Mori Trail, and the portion of beach owned by the NPS, but dogs would not be allowed on the Pollywog Trail, which is located adjacent to the ponds. Impacts under alternative C would be similar to those for alternative B. Coastal scrub and grassland vegetation could be impacted in the LOD area along the Mori Coastal Trail. The vegetation in the areas adjacent to the trail would be affected by dogs through trampling and dog waste. The impacts caused by dog activities in the LOD area would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Compared to the size of the Mori Point site, the areas of vegetation that could be impacted by on-leash dog walking are small. Additionally, physically restraining dogs on leash would protect vegetation off trail at the site. Therefore, assuming compliance, the overall impacts on the coastal scrub/chaparral/ grassland vegetation communities under alternative C would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the GGNRA sites where permits to walk more than three dogs would be issued. Since commercial dog walking is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/ grassland vegetation.

Cumulative Impacts. The negligible impacts on coastal scrub/chaparral/grassland communities from dogs at Mori Point under alternative C were considered together with the beneficial effects of the park stewardship programs and the *Mori Point Restoration and Trail Plan*, described under alternative A. Cumulatively, alternative C would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, assuming compliance, there would be no impact on coastal scrub/chaparral/grassland vegetation from dogs at this site.

Since dogs would not be allowed at Mori Point, there would be no impact from commercial dog walkers on the coastal scrub/chaparral/grassland vegetation communities.

Cumulative Impacts. The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs under alternative D was considered together with the beneficial effects of the park stewardship programs and the *Mori Point Restoration and Trail Plan*, described under alternative A. Cumulatively, alternative D would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails and beach as alternative C, with the addition of the Pollywog Trail. The areas surrounding the Pollywog Trail do not support coastal scrub or grassland vegetation. Therefore, the impacts under alternative E would be the same as those described for alternative C. In general, impacts would be limited to the beach and the 6-foot corridors immediately adjacent to the trails. The Mori Coastal Trail and Old Mori Trail, where on-leash dog walking is allowed, wind through coastal scrub and grassland habitats. The vegetation in the areas adjacent to the trail would be affected by dogs through trampling and dog waste. The impacts in the LOD area caused by dog activities would be long

term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Compared to the size of the Mori Point site, the areas of vegetation that could be impacted by on-leash dog walking are small. Additionally, physically restraining dogs on leash would protect vegetation off trail at the site. Therefore, assuming compliance, the overall impacts on the coastal scrub/chaparral/ grassland vegetation community under alternative E would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the GGNRA sites where permits to walk more than three dogs would be issued. Since commercial dog walking is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/ grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Mori Point under alternative E were considered together with the beneficial effects of the park stewardship programs and the *Mori Point Restoration and Trail Plan*, as described under alternative A. Cumulatively, alternative E would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Mori Coastal Trail, Old Mori Trail, Pollywog Trail, Mori Headlands Trail, and the portion of beach owned by the NPS. Coastal scrub and grassland vegetation could be impacted in the LOD area along the Mori Coastal Trail. The vegetation in the areas adjacent to the trail would be affected by dogs through trampling and dog waste. The impacts caused by dog activities in the LOD area would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Compared to the size of the Mori Point site, the areas of vegetation that could be impacted by on-leash dog walking are small. Additionally, physically restraining dogs on leash would protect vegetation off trail at the site. Therefore, assuming compliance, the overall impacts on the coastal scrub/chaparral/ grassland vegetation community under the preferred alternative would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the GGNRA sites where permits to walk more than three dogs would be issued. Since commercial dog walking activity is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of vegetation communities at park sites such as Mori Point. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Mori Point. The *Mori Point Restoration and Trail Plan* preserved and restored habitat by reducing threats to native plant communities and natural processes, provided habitat connectivity between upland and wetland areas, and developed a safe and sustainable trail system which improved recreational experiences and reduced impacts on park resources (NPS 2010e, 1, GGNPC 2016, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Mori Point, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Mori Point under the preferred alternative were considered together with the beneficial effects of the park stewardship programs and from the *Mori Point Restoration and Trail Plan*. Cumulatively, the preferred alternative would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

MORI POINT PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Milagra Ridge

Alternative A: No Action. Nearly the entire site of Milagra Ridge is composed of coastal scrub vegetation, although the site also supports coastal chaparral and grassland habitat. On-leash dog walking is currently allowed on all trails and fire roads. This site has documented low visitor use by bicyclists, walkers, and hikers, and high visitor use by dog walkers (table 10). Although current GGNRA regulations require dogs to be leashed at Milagra Ridge, unleashed dogs have been observed at the site; violations totaled 35 from 2008 through 2011 and an additional 10 violations between 2012 and 2016 (tables 28a and 28b).

Under alternative A, dogs would continue to contribute to physical disturbance to vegetation through digging, trampling, and nutrient addition. In addition, some of the off-leash dogs at the site may go off trail into adjacent, undisturbed areas and impact vegetation in these areas. Therefore, impacts would continue to be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area. In addition, the NPS has invested time and money in extensive restoration projects at Milagra Ridge, and the impacts from dogs would continue to negate the success of these restoration projects.

No permit system exists for dog walking under alternative A. At Milagra Ridge, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on coastal scrub/ chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Milagra Ridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Milagra Ridge. The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica (Sharp Park, located near Milagra Ridge) and addresses dog walking (including on-leash dog walking and off-leash DPAs) in this area (SFPD 2011, 261-262). Project activities included in the SNRAMP would protect and improve habitat and provide long-term beneficial impacts to vegetation.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Milagra Ridge, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Milagra Ridge under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the park stewardship programs and the SNRAMP would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the park stewardship programs combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts on the coastal scrub/chaparral/grassland communities.

MILAGRA RIDGE ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs are caused through physical damage such as trampling, digging, and dog waste, and these effects would continue to negate restoration efforts	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Fire Road, the trail to the westernmost overlook and World War (WW) II bunker, and Milagra Battery Trail. However, the trail to the top of the hill would not be open for dog walking in this alternative. In general, impacts on vegetation would be limited to the 6-foot corridors immediately adjacent to the trails/fire road. Impacts in areas adjacent to the trail in the 6-foot corridors or LOD area would be long term, minor, and adverse since the area supports existing vegetation. Impacts on vegetation could include trampling and

nutrient addition from dog waste and urine; these impacts on vegetation would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Milagra Ridge would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking at Milagra Ridge is not common, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/ chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Milagra Ridge under alternative B were considered together with the effects of the projects mentioned above under alternative A. Cumulatively, alternative B would have negligible impacts on the coastal scrub/chaparral/grassland communities at or in the vicinity of Milagra Ridge when added to the effects from these projects.

MILAGRA RIDGE ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B and impacts on coastal scrub/chaparral/grassland vegetation at this site would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the GGNRA sites where permits to walk more than three dogs would be issued. Since commercial dog walking activity is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/ grassland vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on the coastal scrub/chaparral/ grassland communities at this park site would be the same as those under alternative B: negligible cumulative impacts.

MILAGRA RIDGE ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, assuming compliance, no impact on coastal scrub/chaparral/ grassland vegetation from dogs would occur.

Since dogs would not be allowed at Milagra Ridge, there would be no impact from commercial dog walkers on the coastal scrub/chaparral/grassland vegetation communities.

Cumulative Impacts. The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs at Milagra Ridge under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from park stewardship programs and the SNRAMP combined with the lack of impacts on the coastal scrub/chaparral/grassland communities from alternative D would result in beneficial cumulative impacts.

MILAGRA RIDGE ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails as alternative B, with the addition of a trail to the top of the hill, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the GGNRA sites where permits to walk more than three dogs would be issued. Since commercial dog walking is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/ grassland vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on the coastal scrub, chaparral, and grassland communities would be the same as those under alternative B: negligible cumulative impacts.

MILAGRA RIDGE ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative E, allowing on-leash dog walking on the fire road, the trail to the westernmost overlook and WW II bunker, Milagra Battery Trail, and the trail to the top of the hill. In general, impacts on vegetation would be limited to the 6-foot corridors immediately adjacent to the trails/fire road. Impacts in areas adjacent to the trail in the 6-foot corridors or LOD area would be long term, minor, and adverse since the area supports existing vegetation. Impacts on vegetation could include trampling and nutrient addition from dog waste and urine; these impacts on vegetation would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole, and physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Milagra Ridge would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the GGNRA sites where permits to walk more than three dogs would be issued. Since commercial dog walking is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Milagra Ridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Milagra Ridge. The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica (Sharp Park, located near Milagra Ridge) and addresses dog walking (including on-leash dog walking and off-leash DPAs) in this area (SFPD 2011, 261-262). Project activities included in the SNRAMP would protect and improve habitat and provide long-term beneficial impacts to vegetation.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Milagra Ridge, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Milagra Ridge under the preferred alternative were considered together with the effects of the projects mentioned above.

Cumulatively, the preferred alternative would have negligible impacts on the coastal scrub/chaparral/ grassland communities at or in the vicinity of Milagra Ridge when added to the effects from these projects.

MILAGRA RIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Sweeney Ridge/Cattle Hill

Alternative A: No Action. Currently, on-leash dog walking is allowed on all trails at Sweeney Ridge except the Notch Trail, which is closed to dogs. The site is dominated by coastal scrub and chaparral vegetation, with grassland vegetation occurring along the Notch Trail and the western portions of the Sweeney Ridge Trail. This site has documented moderate visitor use by dog walkers and off-leash incidents totaled 115 from 2008 through 2011 with an additional 11 violations between 2012 and 2016 (tables 29a and 29b). Therefore, off-leash dog walking is currently occurring along the trails of Sweeney Ridge. Cattle Hill is not yet part of GGNRA, but unrestricted dog walking occurs at this site, and dogs have contributed to physical disturbance of vegetation.

Under alternative A, dogs would continue to contribute to physical disturbance at Sweeney Ridge and Cattle Hill through trampling, digging, and dog waste. In addition, since off-leash dog walking currently occurs at the sites, it is likely that dogs would continue to walk or run through other undisturbed areas adjacent to existing trails. Therefore, impacts on coastal scrub/chaparral/grassland vegetation as a result of alternative A would continue to be long term, minor, and adverse at these sites because effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for dog walking under alternative A. Commercial dog walking is uncommon at Sweeney Ridge and Cattle Hill; therefore, commercial dog walking would have negligible impacts on coastal scrub/chaparral/grassland vegetation at these sites.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge/Cattle Hill were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Sweeney Ridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Sweeney Ridge. The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica (Sharp Park, located near Sweeney Ridge) and addresses dog walking (including on-leash dog walking and off-leash DPAs) in this area (SFPD 2011, 261-262). Project activities included in the SNRAMP would protect and improve habitat and provide long-term beneficial impacts to vegetation.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Sweeney Ridge, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a,

613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Sweeney Ridge and Cattle Hill under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the park stewardship programs and the SNRAMP would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for these park sites will focus on the results of the impact analysis for this alternative. The beneficial effects from the park stewardship programs combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts on the coastal scrub/chaparral/grassland communities.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, dogs would not be allowed at Sweeney Ridge and Cattle Hill. Therefore, assuming compliance, no impact on coastal scrub/chaparral/grassland vegetation from dogs would occur at these sites.

Since dogs would not be allowed at Sweeney Ridge and Cattle Hill, there would be no impact from commercial dog walkers on the coastal scrub/chaparral/grassland vegetation communities.

Cumulative Impacts. The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs at Sweeney Ridge/Cattle Hill under alternative B was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from park stewardship programs combined with the lack of impacts on the coastal scrub/chaparral/grassland communities from alternative B would result in beneficial cumulative impacts.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at both sites	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, dogs would not be allowed at Sweeney Ridge. Therefore, no impact on coastal scrub/chaparral/grassland vegetation from dogs would occur at this site. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to, and including, the Farallon View Trail. In general, impacts on coastal scrub/chaparral/grassland vegetation would be limited to the 6-foot corridors immediately adjacent to the trails. Impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation; impacts on vegetation could include trampling and nutrient addition from dog waste and urine. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area at Cattle Hill would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Cattle Hill would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill are not GGNRA sites where permits to walk more than three dogs would be issued. Since dog walking would not be allowed at Sweeney Ridge, commercial dog walking under alternative C would have no impact on coastal scrub/chaparral/grassland vegetation. Since commercial dog walking is not common at Cattle Hill, it is likely that this alternative would not have an impact on the number of dog walkers.

Cumulative Impacts. The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs at Sweeney Ridge under alternative C was considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the park stewardship programs and the SNRAMP combined with the lack of impacts from the alternative C would result in beneficial cumulative impacts on the coastal scrub/chaparral/grassland communities at Sweeney Ridge. Cumulatively, alternative C would have negligible impacts on the coastal scrub, chaparral, and grassland communities at Cattle Hill when added to the effects from these projects.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact at Sweeney Ridge	Dogs would be prohibited at Sweeney Ridge	Beneficial, assuming compliance	Beneficial cumulative impacts at Sweeney Ridge
Overall negligible impacts, assuming compliance, at Cattle Hill	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts at Cattle Hill

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at Sweeney Ridge and Cattle Hill. Therefore, assuming compliance, no impact on coastal scrub/chaparral/grassland vegetation from dogs would occur at these sites.

Since dogs would not be allowed at Sweeney Ridge and Cattle Hill, there would be no impact from commercial dog walkers on the coastal scrub/chaparral/grassland vegetation communities.

Cumulative Impacts. Under alternative D, the cumulative impacts on the coastal scrub/chaparral/grassland communities would be the same as those under alternative B: beneficial cumulative impacts.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at both sites	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. At Sweeney Ridge, alternative E would allow on-leash dog walking along Sweeney Ridge Trail from Portola Discovery Site to the Notch Trail and to the junction with Mori Ridge Trail, and on Sneath Lane. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to and including the Farallon View Trail. In general, impacts on coastal scrub/chaparral/grassland vegetation would be limited to the 6-foot corridors immediately adjacent to the trails. Impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation; impacts on vegetation could include trampling and nutrient addition from dog waste and urine. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the sites as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Sweeney Ridge and Cattle Hill would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill are not GGNRA sites where permits to walk more than three dogs would be issued. Since commercial dog walking is not common at Sweeney Ridge or Cattle Hill, it is likely that this alternative would not have an impact on the number of dog walkers.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Sweeney Ridge/Cattle Hill under alternative E were considered together with the effects of the projects mentioned above under alternative A. Cumulatively, alternative E would have negligible impacts on the coastal scrub/chaparral/grassland communities at these park sites when added to the effects from these projects.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the sites	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. On-leash dog walking would be allowed at Sweeney Ridge on Sneath Lane and on Sweeney Ridge Trail between Portola Discovery Site and the Nike Missile Site. On-leash dog walking would be allowed at Cattle Hill on the Baquiano Trail from Fassler Avenue up to and including the Farallon View Trail. In general, impacts on vegetation would be limited to the 6-foot corridors immediately adjacent to the trails. Impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation; impacts on vegetation could include trampling and nutrient addition from dog waste and urine. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area at Sweeney Ridge/Cattle Hill would occur in a relatively small area compared to the sites as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Sweeney Ridge and Cattle Hill would be

negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill are not GGNRA sites where permits to walk more than three dogs would be issued. Since commercial dog walking activity is not common at Sweeney Ridge and Cattle Hill, it is likely that this alternative would not have an impact on the number of dog walkers.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge/Cattle Hill were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Sweeney Ridge/Cattle Hill. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Sweeney Ridge/Cattle Hill. The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica (Sharp Park, located near Sweeney Ridge/Cattle Hill) and addresses dog walking (including on-leash dog walking and off-leash DPAs) in this area (SFPD 2011, 261-262). Project activities included in the SNRAMP would protect and improve habitat and provide long-term beneficial impacts to vegetation.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Sweeney Ridge/Cattle Hill, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Sweeney Ridge and Cattle Hill under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and the SNRAMP combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on the coastal scrub/chaparral/grassland communities at Sweeney Ridge and Cattle Hill when added to the effects of these projects.

SWEENEY RIDGE/CATTLE HILL PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Rancho Corral de Tierra

Alternative A: No Action. Currently, on-leash dog walking is allowed at Rancho Corral de Tierra. Some areas of Rancho are dominated by coastal scrub, chaparral, and grassland vegetation, including areas along trails at the site. Staff regularly working at Rancho characterize use by dog walkers as moderate overall with moderate to high use in the Montara area; compliance with the leash law is generally low. At

Rancho, NPS rangers have observed off-leash dogs running in areas with unmarked, potentially sensitive habitat.

Under alternative A, dogs would continue to contribute to physical disturbance at Rancho through trampling, digging, and dog waste. In addition, since off-leash dog walking currently occurs at Rancho, it is likely that dogs would continue to walk or run through other undisturbed areas adjacent to existing trails. Therefore, impacts on coastal scrub/chaparral/grassland vegetation as a result of alternative A would continue to be long term, minor, and adverse at Rancho because effects would be measurable and perceptible, but visitor use is low to moderate at the site, and impacts from on-leash dogs would be localized in a relatively small area. According to information from the Montara Dog Group and subsequent staff observations, dog walkers, particularly off-leash dog walkers, primarily use the lower elevations of the site at both the Montara and El Granada areas. The terrain at El Granada is particularly steep and challenging, thus dog walking use in that area appears to be concentrated mostly in the lower elevations. Although the Montara area is less steep, visitor use there is similarly concentrated in the lower elevations, but some dog walkers in the Montara area do use trails that connect to the top of the Rancho site. Noncompliant dogs off leash would continue to run through undisturbed areas.

No permit system exists for dog walking under alternative A. Commercial dog walkers typically use the El Granada area off of Coral Reef Avenue; however, commercial dog walking is considered a low use at the site overall. Therefore, commercial dog walking would have negligible impacts on coastal scrub/ chaparral/grassland vegetation at this site.

Cumulative Impacts. Projects and actions in and near Rancho were considered for the cumulative impacts analysis (appendix K). Since the Rancho Corral de Tierra site has been transferred to the NPS, general maintenance and protection of the site and associated natural resources have been occurring, although some impacts may remain from prior unregulated off-leash dog walking.

The GGNRA Maintenance Division conducts many ongoing functions throughout GGNRA that include, but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites. Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involved constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica and Montara (County of San Mateo 2016d, 1). Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Rancho Corral de Tierra under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the park stewardship programs would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the park stewardship programs combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts on the coastal scrub/chaparral/grassland communities.

RANCHO CORRAL DE TIERRA ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. On-leash dog walking would be allowed on designated trails in two areas open to dog walking near Montara and El Granada which were identified by the local dog walking group as key areas for this use. In general, impacts on coastal scrub/chaparral/grassland vegetation would be limited to the 6-foot corridors immediately adjacent to the trail (LOD area). Impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation. Impacts on coastal scrub/chaparral/grassland vegetation could include trampling and nutrient addition from dog waste and urine; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a very small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Rancho would be negligible.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking at Rancho is not common, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/ grassland vegetation.

Cumulative Impacts. The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs at Rancho under alternative B was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from park stewardship programs combined with the lack of impacts on the coastal scrub/chaparral/grassland communities from alternative B would result in beneficial cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, dog walking under voice and site control would be allowed in a VSCA located between Le Conte and Tamarind Street, in a vegetated open area across the street and east of the Farallone View School. On-leash dog walking would be allowed on designated trails in two areas open to dog walking near Montara and El Granada. The vegetation in the VSCA is not comprised of sensitive coastal scrub/chaparral/grassland vegetation,

but is mostly annual, non-native grasses in a wet area. This area would become trampled and could become muddy in the winter rainy season which may cause erosion during rain events. In general, impacts on coastal scrub/chaparral/grassland vegetation would be limited to the 6-foot corridors immediately adjacent to the trail and within the small-sized VSCA (LOD area). Impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation, that would be impacted. Other impacts on coastal scrub/chaparral/grassland vegetation could include trampling and nutrient addition from dog waste and urine; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a very small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Rancho would be negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking is not common at Rancho, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on the coastal scrub/chaparral/grassland communities would be the same as those under alternative B: beneficial cumulative impacts. Although alternative C allows a VSCA (alternative B does not), the vegetation in the VSCA is mostly annual, non-native grasses and the VSCA is small in size compared to the entire Rancho Corral de Tierra site. Therefore, beneficial cumulative impacts are appropriate under alternative C.

RANCHO CORRAL DE TIERRA ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site; VSCA is small and comprised of annual, non-native grasses that would be trampled	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed in the Montara area on two existing trails that allow dog walking: Old San Pedro Mountain Road and the Farallon Cutoff. Dogs would be prohibited in other areas of the site, including the entire El Granada area. Impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation. Impacts on coastal scrub/chaparral/grassland vegetation could include trampling and nutrient addition from dog waste and urine; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Rancho would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, no impact would occur as a result of commercial and permitted dog walking.

Cumulative Impacts. Under alternative D, the cumulative impacts on the coastal scrub/chaparral/ grassland communities would be the same as those under alternative B: beneficial cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Dog walking under alternative E would be the same as under alternative C and impacts on coastal scrub/chaparral/grassland vegetation would also be the same. Impacts on the trail and within the small-sized VSCA would be long term, minor, and adverse since the area supports existing vegetation which would be trampled and impacts overall would be negligible, assuming compliance.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking activity is not common at Rancho, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on the coastal scrub/chaparral/ grassland communities would be the same as those under alternative B: beneficial cumulative impacts. Although alternative C allows a VSCA (alternative B does not), the vegetation in the VSCA is mostly annual, non-native grasses and the VSCA is small in size compared to the entire Rancho Corral de Tierra site. Therefore, beneficial cumulative impacts are appropriate under alternative E.

RANCHO CORRAL DE TIERRA ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site; VSCA is small and comprised of annual, non-native grasses that would be trampled	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on designated trails in three areas. Trails in Montara include Old San Pedro Mountain Road, LeConte Trail, Corona Pedro Trail, and Farallon Cutoff from the park boundary in the west to the intersection with Corona Pedro Trail. On-leash trails in the El Granada area include the Denniston Ridge Trail between the San Carlos Trail and its intersection with the Clipper Ridge Trail, the Clipper Ridge Trail, the Memorial

Loop, the Almeria Trail, and the San Carlos Trail. In the Moss Beach area, on-leash dog walking would be allowed on the Vincente Ridge and Ranchette Trails. Physically restraining dogs on leash would protect vegetation off trail. The preferred alternative would also establish a VSCA at Flat Top; however, the area is a former quarry site and is not comprised of sensitive coastal scrub/chaparral/grassland vegetation. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Rancho would be negligible.

Under alternative F, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking activity is not common at Rancho, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative F would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Rancho were considered for the cumulative impacts analysis (appendix K). Since the Rancho Corral de Tierra site has been transferred to the NPS, general maintenance and protection of the site and associated natural resources have been occurring, although some impacts may remain from prior unregulated off-leash dog walking.

The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites. Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involves constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica and Montara (County of San Mateo 2016d, 1)). Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Rancho Corral de Tierra under the preferred alternative were considered together with the effects of the actions mentioned above. The beneficial effects from the park stewardship programs combined with the negligible impacts under the preferred alternative would result in beneficial cumulative impacts on the coastal scrub/chaparral/grassland communities.

RANCHO CORRAL DE TIERRA PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

IMPACTS TO WETLANDS AND AQUATIC HABITATS BY SITE AND ALTERNATIVE

GGNRA contains both freshwater wetlands and coastal (estuarine) wetlands (riparian forest and stream corridors are considered separately). Vegetation in these wetlands is composed of both herbaceous and woody plant species; detailed descriptions have been presented in chapter 3 for wetland plant communities. Wetlands are located at Rodeo Beach/South Rodeo Beach (Rodeo Lagoon and Rodeo

Lake), Muir Beach (tidal lagoon), Crissy Field, and Mori Point. Some of the wetlands in GGNRA have already been restored or are currently undergoing restoration. In general, dogs are prohibited from accessing most wetlands in GGNRA, but citations and incident reports related to dog activities at some of these sites do exist (table 10 and appendix G).

MARIN COUNTY SITES

Muir Beach

Alternative A: No Action. The Lower Redwood Creek restoration project restored the channel of the creek, restored the lagoon, and created breeding ponds for California red-legged frog. The lagoon located at Muir Beach is described as a small tidal lagoon fringed by wetland vegetation. Restoration of the lagoon was completed at this site in 2009 and included increasing its size and depth, adding woody debris and revegetating the shoreline; invasive vegetation was also removed as part of the restoration project (NPS 2013c). Under current conditions, dog walking is allowed on leash or under voice control on the beach and on leash on the Muir Beach Trail, Kaashi Way from the beach to the Coastal Trail, and the parking lot. The lagoon and Redwood Creek would be the resources that could be affected under alternative A. The park has closed the lagoon and Redwood Creek to dogs, although there is no physical barrier to prevent dogs from accessing the lagoon or Redwood Creek, and it has been observed that these closures have been violated (table 7a). The area is considered a moderate to high use site, and dogs do gain access to the lagoon and surrounding wetland habitat.

Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wetland and aquatic vegetation at this site because effects on sensitive habitat would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative A, no permit system exists for commercial dog walking. At Muir Beach, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on wetland vegetation.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. The initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010a, 1). Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project restored the lagoon in 2009 to provide a functional, resilient ecosystem while also providing habitat for special-status species and reducing flooding on Pacific Way. This project restored and enhanced ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009j, 1). Phase I of this project reconnected the creek to the flood plain and expanded the tidal lagoon. Similarly, the NPS and the California State Lands Commission formulated the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay) that restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). The

Lower Redwood Creek Floodplain and Salmonid Habitat Restoration restored channel function to reduce flooding and reconnect the creek to its floodplain, as well as expanding vegetation at the Banducci site (NPS 2010b, 1). The *Dias Ridge Restoration and Trail Improvement Project* realigned trail segments and restored degraded areas on Dias Ridge above Muir Beach (NPS 2016).

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Muir Beach is uncommon. However, the interim compendium amendment would have a slight beneficial effect on wetlands and aquatic habitats by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and nutrient addition from dog waste.

Additional actions have had or have the potential to have adverse effects on wetland and aquatic habitats at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats would have a cumulative effect, whether beneficial or adverse, on wetlands.

The long-term minor to moderate adverse impacts on wetland and aquatic vegetation from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects and the interim permitting program should reduce some of the adverse impacts on vegetation from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add adversely to the cumulative impacts on vegetation, even with wetland mitigation. There would be a combination of beneficial and adverse effects from actions in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be long term, minor to moderate, and adverse.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate, adverse impacts	Wetland vegetation around lagoon would be affected by dogs through trampling and increased turbidity; there would be no physical barrier to prevent dogs from accessing the lagoon shoreline and closures would continue to be violated regularly	N/A	Long-term, minor to moderate, adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking in the parking area, the Muir Beach Trail including the pedestrian bridge, the portion of Kaashi Way from the bridge to the beach, and the beach and would therefore not have an effect on wetland resources beyond the lagoon and Redwood Creek. Under alternative B, protection of wetland and aquatic habitats would occur through requiring on-leash dog walking. If dogs at this site are physically restrained on leash, they should not gain access to the lagoon or its shorelines. As part of the restoration plan at this site, post-and-cable fencing would be installed between the tidal lagoon and Muir Beach to discourage visitors from accessing the lagoon, but the fencing would not physically exclude noncompliant dogs from the area. Therefore, assuming compliance, alternative B would result in negligible impacts on wetland and aquatic vegetation at this site because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on wetland vegetation.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils.

The initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010a, 1). Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance.

Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project restored the lagoon in 2009 to provide a functional, resilient ecosystem while also providing habitat for special-status species and reducing flooding on Pacific Way. This project restored and enhanced ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009j, 1). Phase I of this project reconnected the creek to the floodplain and expanded the tidal lagoon. Similarly, the NPS and the California State Lands Commission formulated the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay) that restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). The Lower Redwood Creek Floodplain and Salmonid Habitat Restoration restored channel function to reduce flooding and reconnect the creek to its floodplain, as well as expanding vegetation at the Banducci site (NPS 2010b, 1). The *Dias Ridge Restoration and Trail Improvement Project* realigned trail segments and restored degraded areas on Dias Ridge above Muir Beach (NPS 2016, 1).

Additional actions have had or have the potential to have adverse effects on wetland and aquatic habitats at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in

the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats would have a cumulative effect on wetlands, whether beneficial or adverse.

The negligible impacts on wetland and aquatic vegetation from dogs at Muir Beach under alternative B were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative B would result in negligible cumulative impacts on wetland and aquatic vegetation.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking activity is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on wetland and aquatic vegetation at this park site would be the same as those under alternative B: negligible cumulative impacts.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. In the vicinity of Muir Beach, alternative D would allow on-leash dog walking in the parking area and on Muir Beach Trail. Dogs would not be allowed along the lagoon shoreline. Assuming compliance, dogs would not be able to gain access to wetland vegetation. Therefore, assuming compliance, alternative D would not result in impacts on wetland and aquatic vegetation at this site.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wetland vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Muir Beach under alternative D were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative D would result in negligible cumulative impacts on wetland and aquatic vegetation.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impacts, assuming compliance	Physically restraining dogs would protect wetlands along the shoreline of the lagoon because dogs would not be allowed along the lagoon shoreline, but only on the Muir Beach Trail	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking in the parking area, the Muir Beach Trail including the pedestrian bridge, the portion of Kaashi Way from the bridge to the beach and would establish a VSCA on the beach south of the boardwalk/path to the beach; the remainder of the beach would be closed to dog walking. This alternative would protect wetland and aquatic habitat through requiring on-leash dog walking and prohibiting dogs on the portion of beach adjacent to the lagoon. The VSCA is not located in or adjacent to wetland vegetation surrounding the lagoon. Therefore, assuming compliance, alternative E would result in negligible impacts on wetland vegetation.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on wetland vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wetland vegetation.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the VSCA and physical restraint of dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the parking area, the Muir Beach Trail including the pedestrian bridge, the beach, and Kaashi Way from the beach to Pacific Way. Fencing would be installed along the dunes, the lagoon, and Kaashi Way as needed to protect resources. The tidal lagoon and Redwood Creek, which are currently closed to dogs, would remain so. Assuming compliance, dogs would not be able to gain access to wetland and aquatic vegetation. The protection of wetland and aquatic habitat would occur through requiring on-leash dog walking. If dogs at this site are physically restrained on leash they should not gain access to the lagoon or its shorelines, because dogs would not be allowed along the lagoon shoreline. As part of the restoration plan at this site, post-and-cable fencing would be installed between the tidal lagoon and Muir Beach to discourage visitors from accessing the lagoon and fencing or vegetation would be added along Kaashi Way to provide a barrier for access to the ponds in the northern portion of the site, but these barriers would not physically exclude noncompliant dogs from the area. Additionally, under the preferred alternative, when there is a surface water connection between the ocean and the lagoon, dogs would be prohibited from entering the surface waters. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on wetland and aquatic vegetation at this site because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking activity is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. The park stewardship programs initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010a, 1). Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project restored the lagoon in 2009 to provide a functional, resilient ecosystem while also providing habitat for special-status species and reducing flooding on Pacific Way. This project restored and enhanced ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009j, 1). Similarly, the NPS and the California State Lands Commission formulated the *Giacomini*

Wetland Restoration Project (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). The Lower Redwood Creek Floodplain and Salmonid Habitat Restoration restored channel function to reduce flooding and reconnect the creek to its floodplain as well as expanding vegetation at the Banducci site (NPS 2010b, 1). The *Dias Ridge Restoration and Trail Improvement Project* realigned trail segments and restored degraded areas on Dias Ridge above Muir Beach (NPS 2016, 1). Additional vegetation benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way.

Additional actions have had or have the potential to have adverse effects on wetland and aquatic habitat at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The negligible impacts on wetland and aquatic vegetation from dogs at Muir Beach under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wetland and aquatic vegetation.

MUIR BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would protect wetlands and aquatic habitats along the shoreline of the lagoon and around ponds because dogs would not be allowed along the lagoon shoreline; dogs would be allowed on leash on the proposed Muir Beach Trail, which supports some wetland habitat	Beneficial, assuming compliance	Negligible cumulative impacts

Rodeo Beach/South Rodeo Beach (Rodeo Lagoon)

Alternative A: No Action. Under current conditions, dogs are allowed on leash or under voice control on both beaches (Rodeo Beach and South Rodeo Beach). On-leash dog walking is allowed on the footbridge and access trail to those beaches. Rodeo Lagoon and Rodeo Lake (discussed under "Marin Headlands Trails" for Wetlands and Aquatic Habitat Impacts) are currently closed to dogs. The NPS has restricted people and their pets from accessing the lagoon and its shoreline for overall resource protection. A fence is proposed along the western shoreline of the lagoon that will deter but not physically exclude dogs from accessing the lagoon from the beach. The voice control areas are located immediately adjacent to the shoreline of the lagoon. The area receives moderate to high use by beachgoers and low to moderate use by dog owners/walkers (table 10). Park staff members have estimated that they observe dogs in the lagoon at least once a week, and on a daily basis during good weather. Trampling can affect wetland and

aquatic plant species either directly, by reducing the integrity of the plants' root systems, or indirectly, by causing increased turbidity (sedimentation) that may smother emergent plants.

Therefore, because dogs would continue to access Rodeo Lagoon and its shoreline, alternative A would result in continued long-term minor adverse impacts on wetland and aquatic vegetation at Rodeo Lagoon because effects would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative A, no permit system exists for commercial dog walking. At Rodeo Beach/South Rodeo Beach, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on wetland vegetation.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Rodeo Beach/South Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Rodeo Beach/South Rodeo Beach. A specific example of a project that will provide beneficial effects to wetlands is the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007).

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Rodeo Beach/South Rodeo Beach is uncommon. However, the interim compendium amendment would have a slight beneficial effect on wetlands and aquatic habitats by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling and dog waste.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wetlands.

The long-term minor adverse impacts on wetland and aquatic vegetation from dogs at Rodeo Beach/South Rodeo Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects and the interim permitting program should reduce some of the adverse impacts on wetland and aquatic vegetation from alternative

A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add adversely to the cumulative impacts on wetland and aquatic vegetation, even with mitigation. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wetland vegetation under this alternative would be expected to be long term, minor, and adverse.

RODEO BEACH/SOUTH RODEO BEACH (RODEO LAGOON) ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor, adverse impacts	Wetland vegetation around lagoon would be affected by dogs through trampling and turbidity; no physical barrier would exist to prevent dogs from accessing the lagoon, and closures would continue to be violated regularly	N/A	Long-term, minor, adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed on Rodeo Beach, South Rodeo Beach, and on the footbridge and access trail to the beaches. Rodeo Lagoon and Rodeo Lake are currently closed to dogs. As part of an already approved project, a post-and-cable fence would be constructed on the western edge of Rodeo Lagoon that would discourage visitors but not physically exclude visitors or dogs from accessing the lagoon. If dogs at this site are physically restrained on leash and deterred by the fence, they should not gain access to the lagoon or its shoreline. Therefore, assuming compliance, alternative B would result in negligible impacts on the wetland and aquatic vegetation associated with Rodeo Lagoon because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Rodeo Beach/South Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Rodeo Beach/South Rodeo Beach. A specific example of a project that will provide beneficial effects to wetlands is the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay),

which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats will have a cumulative effect on wetlands, whether beneficial or adverse.

The negligible impacts on wetland and aquatic vegetation from dogs at Rodeo Beach/South Rodeo Beach under alternative B were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative B would result in negligible cumulative impacts on wetland and aquatic vegetation.

RODEO BEACH/SOUTH RODEO BEACH (RODEO LAGOON) ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed on the footbridge to the beach, and dogs would be allowed under voice and sight control in a VSCA on Rodeo Beach. Rodeo Lagoon and Rodeo Lake are currently closed to dogs. The VSCA would include portions of the sparsely vegetated foredunes that extend from the crest of the beach east to the lagoon and south to the ridge on the beach north of South Rodeo Beach. The installation of a post-and-cable fence along the beach end of Rodeo Lagoon to be constructed as part of a concurrent project would discourage visitors from accessing the lagoon, but would not physically exclude noncompliant dogs from the lagoon. With the addition of the fence as a deterrent, assuming compliance, this alternative would result in negligible impacts on wetland and aquatic vegetation, because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed for Rodeo Beach/South Rodeo Beach. Impacts on wetland and aquatic vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is

not common at Rodeo Beach/South Rodeo Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Rodeo Beach/South Rodeo Beach under alternative C were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative C would result in negligible cumulative impacts on wetland and aquatic vegetation.

RODEO BEACH/SOUTH RODEO BEACH (RODEO LAGOON) ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the VSCA and physical restraint of dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the beach in areas north of the footbridge and on the footbridge to the beach only. Rodeo Lagoon and Rodeo Lake (discussed under "Marin Headlands Trails" for Wetlands and Aquatic Habitat Impacts) are currently closed to dogs. If dogs at this site are physically restrained on leash and deterred by the fence, they should not gain access to the lagoon or its shoreline. Therefore, assuming compliance, alternative D would result in negligible impacts on the wetland and aquatic vegetation associated with Rodeo Lagoon, because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wetland and aquatic vegetation.

Cumulative Impacts. The negligible impacts on wetland vegetation from dogs at Rodeo Beach/South Rodeo Beach under alternative D were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative D would result in negligible cumulative impacts on wetland and aquatic vegetation.

RODEO BEACH/SOUTH RODEO BEACH (RODEO LAGOON) ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Under alternative E, dog walking under voice and sight control would be allowed in VSCAs on both Rodeo Beach and South

Rodeo Beach. A total of 0.5 mile of beach would be available for off-leash dog walking. On-leash dog walking would be allowed on the footbridge and access trail to the beaches. Rodeo Lagoon and Rodeo Lake would remain closed to dogs. The installation of a post-and-cable fence along the beach side of Rodeo Lagoon proposed as part of an already approved project would discourage visitors from accessing the lagoon, but would not physically exclude noncompliant dogs. Although this alternative includes a VSCA, the addition of the fence as deterrent and compliance with regulations would result in protection of wetland vegetation surrounding Rodeo Lagoon. Assuming compliance with proposed regulations, alternative E would result in negligible impacts on wetland and aquatic vegetation; habitat would be protected and no measurable or perceptible changes in the vegetation would occur.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs at the Rodeo Beach/South Rodeo Beach site. In a VSCA, permit holders may walk one to six dogs off leash. Permits may restrict use by time and area. Impacts on wetland vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on wetland vegetation.

Cumulative Impacts. The negligible impacts on wetland vegetation from dogs at Rodeo Beach/South Rodeo Beach under alternative E were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wetland vegetation.

RODEO BEACH/SOUTH RODEO BEACH (RODEO LAGOON) ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the VSCA and physical restraint of dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the footbridge to the beach, and dogs would be allowed under voice and sight control in a VSCA on Rodeo Beach to the sea stacks dividing the main beach from South Rodeo Beach. Rodeo Lagoon and Rodeo Lake are currently closed to dogs. The VSCA would include portions of the sparsely vegetated foredunes that extend from the crest of the beach east to the lagoon and south to the ridge on the beach just north of South Rodeo Beach. The installation of a post-and-cable fence along the beach end of Rodeo Lagoon to be constructed as part of a concurrent project would discourage visitors from accessing the lagoon, but would not physically exclude noncompliant dogs from the lagoon. Additionally, under the preferred alternative, when there is a surface water connection between the ocean and the lagoon, dogs would be prohibited from entering the surface waters. Assuming compliance, this alternative would result in negligible impacts on wetland vegetation, because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs at the Rodeo Beach/South Rodeo Beach site. In a VSCA, permit holders may walk one to six dogs off leash. Permits may restrict use by time and area. Impacts on wetland vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on wetland vegetation.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Rodeo Beach/South Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Rodeo Beach/South Rodeo Beach. A specific example of a project that will provide beneficial effects to wetlands is the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The negligible impacts on wetland and aquatic vegetation from dogs at Rodeo Beach/South Rodeo Beach under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wetland and aquatic vegetation.

RODEO BEACH/SOUTH RODEO BEACH (RODEO LAGOON) PREFERRED ALTERNATIVE F CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the VSCA and physical restraint of dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts

Marin Headlands Trails

Alternative A: No Action. Currently, on-leash dog walking is allowed along the Coastal Trail from Hill 88 to Muir Beach, the Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, and Marin Drive. Dog walking under voice control (or on leash) is allowed along the section of the Coastal Trail from the Golden Gate Bridge to Hill 88 (which includes the Lagoon Loop Trail), the Coastal, Wolf Ridge, and Miwok Trail Loop, and the Old Bunker Fire Road Loop (includes section of the Coastal Trail). These trails experience low to moderate use by dog walkers, but dog-related incidents are high at this site, with a total of 269 from 2008 through 2011 and an additional 232 violations between 2012 and 2016 (tables 17a and 17b). The Marin Headlands Trails area contains wetland vegetation around Rodeo Lake (which is currently closed) and extensive areas of wetlands in the valley bottom along Rodeo Valley Trail. These wetlands are being affected by dogs through trampling and turbidity; there is no physical barrier to prevent dogs from accessing the lake and closures are violated regularly. Physical disturbance and nutrient addition are currently happening along the trails and fire roads and in off-trail areas throughout the site due to unleashed dogs.

Since dogs would continue to be allowed under voice control in portions of the site under alternative A, there is a higher likelihood that dogs would go off trail than if they were on leash, thus affecting vegetation in adjacent undisturbed areas. Therefore, impacts on wetland and aquatic vegetation as a result of this alternative would continue to be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative A, no permit system exists for dog walking. At the Marin Headlands Trails, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on wetland vegetation.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at the Marin Headlands Trails and projects beyond the park boundaries will generally provide an overall benefit to wetland (including tidal marsh) and aquatic habitats. A specific example of a project that will provide beneficial effects to wetlands is the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). Another such project is the Gulf of the Farallones National Marine Sanctuary's proposed Bolinas Lagoon Ecosystem Restoration Project (near Stinson Beach), which will benefit the vegetation at the Bolinas Lagoon (GFNMS Working Group 2008).

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Marin Headlands Trails is uncommon. However, the interim compendium amendment would have a slight beneficial effect on wetlands vegetation by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and nutrient addition from dog waste.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by

mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

As stated previously, the loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wetlands.

The long-term minor adverse impacts on wetland and aquatic vegetation from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects and the interim permitting program should reduce some of the adverse impacts on vegetation from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add adversely to the cumulative impacts on vegetation, even with mitigation. There would be a combination of beneficial and adverse effects from projects in and around the Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be long term, minor, and adverse.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Wetland vegetation around Rodeo Lake would be affected by dogs through trampling and turbidity; no physical barrier would exist to prevent dogs from accessing the lake and closures would continue to be violated regularly; extensive areas of wetlands exist in the valley bottom along Rodeo Valley Trail	N/A	Long-term, minor, adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs on the trails at the Marin Headlands Trails. Not allowing dog walking on the Marin Headlands Trails would eliminate physical disturbance by dogs and nutrient addition from dog waste. Therefore, assuming compliance, alternative B would result in no impact on wetland vegetation at the site.

Since dogs would not be allowed at the Marin Headlands Trails, there would be no impact from commercial dog walkers on the wetland vegetation.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at the Marin Headlands Trails and projects beyond the park boundaries will generally provide an overall benefit to wetlands (including tidal marsh) and aquatic habitats. A specific example of a project that will provide beneficial effects to wetlands is the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of

pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). Another such project is the Gulf of the Farallones National Marine Sanctuary's proposed Bolinas Lagoon Ecosystem Restoration Project (near Stinson Beach), which will benefit the vegetation at the Bolinas Lagoon (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

As stated previously, the loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wetlands.

The lack of impacts on wetland and aquatic vegetation from dogs at the Marin Headlands Trails under alternative B was considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around the Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. Cumulatively, there would be negligible impacts on wetland and aquatic vegetation at this park site.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed along the Lower Rodeo Valley Trail Corridor. This corridor runs from the Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via the North Lagoon Loop Trail, Miwok Trail, and Rodeo Valley Trail including the connector trail from the Rodeo Valley Trail to Smith Road Trailhead. On-leash dog walking would also be allowed on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), and the Batteries Loop Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. The valley bottom along the Rodeo Valley Trail Corridor is adjacent to extensive areas of freshwater vegetation, and the Miwok Trail is adjacent to Rodeo Lake, which supports shoreline wetland vegetation and is currently closed. Impacts in areas adjacent to the trails/fire roads (LOD area) would be long term, minor, and adverse since this wetland and aquatic vegetation would be affected by trampling and dog waste. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail, and dogs would not be allowed in Rodeo Lake. Therefore, assuming compliance, the overall impact on

wetland and aquatic vegetation from on-leash dog walking would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under alternative C, permits to walk more than three dogs, with a maximum of six, would not be issued for the Marin Headlands Trails site. Since commercial dog walking is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on wetland vegetation.

Cumulative Impacts. The negligible impacts on wetland vegetation from dogs at the Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around the Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative C would result in negligible cumulative impacts on wetland and aquatic vegetation.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect Rodeo Lake wetland vegetation and habitat off trail along the Rodeo Valley Trail Corridor, which supports wetlands	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same restrictions as alternative B (dogs would be prohibited on the trails) and impacts would be the same, assuming compliance: no impact.

Since dogs would not be allowed at the Marin Headlands Trails, there would be no impact from commercial dog walkers on the wetland vegetation.

Cumulative Impacts. Under alternative D, the cumulative impacts on wetland and aquatic vegetation at this park site would be the same as those under alternative B: negligible cumulative impacts.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Conzelman Coastal Trail from Highway 101 to the McCullough intersection and then to the Coastal Trail Bike Route, including Julian Road, to the Rodeo Beach parking lot. On-leash dog walking would also be available on the Old Bunker Fire Road Loop (which includes a section of the Coastal Trail), the Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, Marin Drive, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow dog

access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. The valley bottom along Rodeo Valley Trail Corridor is adjacent to extensive areas of freshwater vegetation, and the Miwok Trail is adjacent to Rodeo Lake, which supports shoreline wetland vegetation and is currently closed. Impacts in areas adjacent to the trails/fire roads (LOD area) would be long term, minor, and adverse since this wetland and aquatic vegetation would be affected by trampling and dog waste. Impacts would be measurable and perceptible, but would be localized in a relatively small area. Even though alternative E would allow more dog access at the site, the difference in dog use between alternatives E and C is not considered large enough to cause a change in the intensity of the impact relative to the area of the site.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Although more trails would be available to dogs in alternative E compared to alternative C, the overall impacts on wetland vegetation from on-leash dog walking would be the same. The continued closure of Rodeo Lake and physically restraining dogs on leash would protect wetland vegetation off trail. Therefore, assuming compliance, the overall impact on wetland and aquatic vegetation would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under alternative E, permits to walk more than three dogs, with a maximum of six, would not be issued for the Marin Headlands Trails site. Since commercial dog walking is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. The negligible impacts on wetland vegetation from dogs at the Marin Headlands Trails under alternative E were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around the Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wetland vegetation.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect Rodeo Lake wetland vegetation and habitat off trail along the Rodeo Valley Trail Corridor, which supports wetlands	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, from the Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via the North Lagoon Loop Trail, Miwok Trail, and the Rodeo Valley Trail, including the connector trail from Rodeo Valley Trail to the Smith Road Trailhead. On-leash dog walking would also be available on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), the Batteries Loop Trail, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. The valley bottom along Rodeo Valley Trail Corridor is adjacent to extensive areas of freshwater vegetation, and the Miwok Trail is adjacent to Rodeo Lake, which supports shoreline

wetland vegetation and is currently closed. Impacts in areas adjacent to the trails/fire roads would be long term, minor, and adverse since this wetland and aquatic vegetation would be affected by trampling and dog waste. Impacts would be measurable and perceptible, but would be localized in a relatively small area. Even though alternative F would allow more dog access at the site, the difference in dog walking use between alternatives F and C is not considered large enough to cause a change in the intensity of the impact relative to the area of the site.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect wetland and aquatic vegetation off trail. Therefore, assuming compliance, the overall impact on wetland and aquatic vegetation from on-leash dog walking would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under the preferred alternative, permits would be issued allowing dog walkers to have more than three dogs on a short segment of the North Lagoon Loop Trail. Allowing dog walkers with four to six dogs on the North Lagoon Loop Trail from the Rodeo Beach parking lot to the pedestrian bridge creates a loop with the permitted areas allowed under the preferred alternative for Rodeo Beach. Since commercial dog walking is not common at Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails. Another project that will provide beneficial effects to wetlands is the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The negligible impacts on wetland and aquatic vegetation from dogs at the Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around the Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wetland vegetation.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE F CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

SAN FRANCISCO COUNTY SITES

Crissy Field

Common to All Alternatives. Impacts from dogs as a result of the two different definitions of the Crissy Field WPA [the 36 CFR 7.97(d) definition for alternative A (Warming Hut to approximately 700 feet east of the former Coast Guard Station pier), and the definitions for alternatives B–F of Warming Hut to approximately 900 feet east of the former Coast Guard Station Pier] will be the same for all alternatives. Even though the WPA would be expanded for alternatives B–F, this change would not influence the overall impacts analysis at this site because it would neither increase nor decrease the impacts at Crissy Field described in the paragraphs that follow. Further explanation of these two definitions can be found in the "Current Regulations and Policies" section of chapter 2.

Alternative A: No Action. Both freshwater and tidal wetlands are present at Crissy Field. A restoration project reestablished a narrow and steep fringe of salt marsh vegetation at approximately 18 acres of an unvegetated tidal lagoon that links with San Francisco Bay (referred to as the tidal marsh). As part of the restoration, California seablite (a federally listed plant species) and Point Reyes bird's-beak (a CNPS-listed species) were introduced into the tidal marsh. Despite protection of the restored tidal marsh (which is currently closed) by installed fencing, dogs under voice control have been documented as gaining access to the tidal marsh through the tidal inlet that allows exchange of water between the marsh and San Francisco Bay. In general, compliance with dog walking regulations at Crissy Field is low, and from 2008 through 2011 a total of 510 incidents were reported, and an addition 98 dog-related incidents were recorded between 2012 and 2016 (tables 20a and 20b). The park has documented that dogs entering the marsh typically go under the bridge that spans the inlet and onto the flood shoal and adjacent areas along the marsh. Alternative A would continue to result in long-term minor adverse impacts on salt marsh vegetation from physical damage by dogs (trampling and increased turbidity). The freshwater wetlands at Crissy Field would continue to receive negligible impacts from dog activities because they are almost completely enclosed by fencing, to prohibit access by dogs and people.

No permit system exists for commercial dog walking under alternative A. However, commercial dog walking at Crissy Field occurs regularly. Commercial dog walking would continue to contribute to the long-term minor adverse impacts on salt marsh vegetation. Commercial dog walkers with multiple dogs under voice control would impact wetland and aquatic vegetation through trampling.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Crissy Field and projects beyond the park boundaries will generally provide an overall benefit to wetland and aquatic habitats. A specific example of a project that will provide beneficial effects to wetlands is the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). Another such project is

the Gulf of the Farallones National Marine Sanctuary's proposed Bolinas Lagoon Ecosystem Restoration Project (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon (GFNMS Working Group 2008). Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of the 18-acre tidal marsh. The subsequent 5-year monitoring program included tracking of hydrology and geomorphology, water quality, soils and sedimentation, vegetation, fish, invertebrates, and birds (NPS 2010a, 1-2).

The PTMP was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). Management objectives in the PTMP that are applicable to vegetation include identifying and protecting sensitive wildlife species, and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forest is being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on wetland vegetation at or in the vicinity of Crissy Field. In addition to the PTMP at the Presidio, the Quartermaster Reach Project is also being conducted and will benefit wetlands at the Presidio and Crissy Marsh. The Quartermaster Reach Project includes "daylighting" about 850 feet of stream currently in a subsurface culvert that discharges to Crissy Marsh (Presidio Trust 2012e, 1). The project will provide an ecological corridor and pedestrian trail through Quartermaster Reach that will connect a recently restored 450-foot stretch of stream and native habitat to the south (known as Thompson Reach) to Crissy Field Tidal Marsh (Presidio Trust 2012e, 1).

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Crissy Field occurs regularly. Therefore, the interim compendium amendment would have a beneficial effect on wetland vegetation by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible to long-term minor adverse impacts on wetland vegetation from dogs at Crissy Field under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects and the interim permitting program should reduce some of the adverse impacts on vegetation from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add adversely to the cumulative impacts on vegetation, even though mitigation has

contributed to reducing impacts. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be negligible to long term, minor, and adverse.

CRISSY FIELD ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts on tidal wetlands; negligible impacts on freshwater wetlands	Tidal marsh vegetation would be affected by dogs through trampling and increased turbidity; despite fencing, dogs under voice control would continue to gain access to the tidal marsh through the tidal inlet; freshwater wetland areas would be fenced to prohibit access by dogs and people	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the promenade, Crissy Airfield, East and Central beaches, paths leading to Central Beach, trails and grassy areas near East Beach, around the Old Coast Guard Station, and on the Mason Street Bike Path. Dogs would be prohibited from the WPA and the tidal marsh. Since dogs would be physically restrained on leash (or prohibited from portions of the site), they should not gain access to the tidal marsh through the tidal inlet. Therefore, assuming compliance, negligible impacts on wetland and aquatic vegetation could occur as a result of this alternative; no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Even though the percentage of commercial dog walkers is considered moderate to high at Crissy Field, dogs would be required to be on leash, preventing dog access to the tidal marsh and wetland vegetation. Therefore, impacts on wetland and aquatic vegetation from dogs walked by both commercial dog walkers and private individuals would be negligible.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Crissy Field and projects beyond the park boundaries will generally provide an overall benefit to wetland and aquatic habitats. A specific example of a project that will provide beneficial effects to wetlands is the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). Another such project is the Gulf of the Farallones National Marine Sanctuary's proposed Bolinas Lagoon Ecosystem Restoration Project (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon (GFNMS Working Group 2008). Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of the 18-acre tidal marsh. The subsequent 5-year monitoring program included tracking of hydrology and geomorphology, water quality, soils and sedimentation, vegetation, fish, invertebrates, and birds (NPS 2010a, 1-2).

The PTMP was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). Management objectives in the PTMP that are applicable to vegetation include identifying and protecting sensitive wildlife species and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forest is being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on wetland vegetation at or in the vicinity of Crissy Field. In addition to the PTMP at the Presidio, the Quartermaster Reach Project is also being conducted and will benefit wetlands at the Presidio and Crissy Marsh. The Quartermaster Reach Project includes "daylighting" about 850 feet of stream currently in a subsurface culvert that discharges to Crissy Marsh (Presidio Trust 2012e, 1). The project will provide an ecological corridor and pedestrian trail through Quartermaster Reach that will connect a recently restored 450-foot stretch of stream and native habitat to the south (known as Thompson Reach) to Crissy Field Tidal Marsh (Presidio Trust 2012e, 1).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible impacts on wetland vegetation from dogs at Crissy Field under alternative B were considered together with the effects of the projects mentioned above. Cumulatively, alternative B would have negligible impacts on wetland vegetation at or in the vicinity of Crissy Field.

CRISSY FIELD ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The existing fence and physical restraint of dogs would protect tidal marsh wetlands, which would be closed to dogs	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. The addition of one VSCA on Central Beach and a second on Crissy Airfield in alternative C would allow dog walking under voice and sight control. On-leash dog walking would be available along the promenade, the eastern and western sections of Crissy Airfield, Mason Street Bike Path, trails and grassy areas near East Beach, around the Old Coast Guard Station, paths to Central Beach, picnic areas, and parking areas. All fenced areas,

including the tidal marsh, are currently closed to dogs, and the WPA and East Beach would be closed under this alternative. Since dogs would be physically restrained on leash in areas surrounding the tidal marsh, dogs should not gain access to the tidal marsh through the tidal inlet. Therefore, assuming compliance, alternative C would result in negligible impacts on wetland and aquatic vegetation because no measurable or perceptible change in the wetland and aquatic plant community would be anticipated at this site.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Even though the percentage of commercial dog walkers is considered moderate to high at Crissy Field, dogs would be required to be on leash, preventing dog access to the tidal marsh and wetland vegetation. Impacts on wetland and aquatic vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the previous paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Crissy Field under alternative C were considered together with the effects of the projects mentioned above in alternative B. Alternative C would have negligible cumulative impacts on wetland and aquatic vegetation at or in the vicinity of Crissy Field when added to the effects from these projects.

CRISSY FIELD ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The existing fence and physical restraint of dogs would protect tidal marsh wetlands, which would be closed to dogs	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would prohibit dogs on all beaches, but would establish a VSCA on the western section of Crissy Airfield. On-leash dog walking would be allowed on the trails and other areas open to dogs in this alternative. All fenced areas, including the tidal marsh, are currently closed to dogs, and the WPA, Central Beach, and East Beach would be closed to dogs under this alternative. Assuming compliance, negligible impacts on wetland and aquatic vegetation would occur as a result of alternative D because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wetland and aquatic vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Crissy Field under alternative D were considered together with the effects of the projects mentioned above in alternative B. Alternative D would have negligible cumulative impacts on wetland and aquatic vegetation at or in the vicinity of Crissy Field when added to the effects from these projects.

CRISSY FIELD ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the VSCA, physical restraint of dogs, and the existing fence would protect tidal marsh wetlands, which would be closed to dogs	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking in the WPA, on the promenade, East Beach, paths to Central Beach, trails and grassy areas near East Beach, around the Old Coast Guard Station, and on the Mason Street Bike Path. Dogs would not be allowed in the tidal marsh, but dogs would be allowed under voice and sight control in two VSCAs established on the Crissy Airfield and Central Beach. Compliance in the VSCAs, physical restraint of dogs on leash in other areas of the site, and the existing fence would protect tidal marsh wetlands at the site. Assuming compliance, alternative E would result in negligible impacts on wetland and aquatic vegetation in the tidal marsh because no measurable or perceptible change in the wetland and aquatic plant community would be anticipated as a result of this alternative.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Even though the percentage of commercial dog walkers is considered moderate to high at Crissy Field, compliance in the VSCAs, physical restraint of dogs on leash in other areas of the site, and the existing fence would protect tidal marsh wetlands at the site. Impacts on wetland and aquatic vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the above paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Crissy Field under alternative E were considered together with the effects of the projects mentioned above in alternative B. Cumulatively, alternative E would be negligible impacts on vegetation at or in the vicinity of Crissy Field.

CRISSY FIELD ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the VSCA, physical restraint of dogs, and the existing fence would protect tidal marsh wetlands, which would be closed to dogs	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. A VSCA on Central Beach and a second on the central section of Crissy Airfield in the preferred alternative would allow dog walking under voice and sight control; on-leash dog walking would be required in all other areas of Crissy Field that would be open to dog walking in this alternative. All fenced areas, including the tidal marsh, are currently closed to dogs, and the WPA and East Beach would be closed under this alternative. Since dogs would be physically restrained on leash in areas surrounding the tidal marsh, dogs should not gain access to the tidal marsh through the tidal inlet. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on wetland

and aquatic vegetation because no measurable or perceptible change in the wetland and aquatic plant community would be anticipated at this site.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs at the Crissy Field site. In a VSCA, permit holders may walk one to six dogs off leash. Permits may restrict use by time and area. Even though the percentage of commercial dog walkers is considered moderate to high at Crissy Field, dogs would be required to be on leash, preventing dog access to the tidal marsh and wetland vegetation. Impacts on wetland and aquatic vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the above paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Crissy Field and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial effects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). The Gulf of the Farallones National Marine Sanctuary has proposed the Bolinas Lagoon Ecosystem Restoration Project (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon (GFNMS Working Group 2008). Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of the 18-acre tidal marsh. The subsequent 5-year monitoring program included tracking of hydrology and geomorphology, water quality, soils and sedimentation, vegetation, fish, invertebrates, and birds (NPS 2010a, 1-2).

The PTMP was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). Management objectives in the PTMP that are applicable to vegetation include identifying and protecting sensitive wildlife species, and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forest is being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on wetland vegetation at or in the vicinity of Crissy Field. In addition to the PTMP at the Presidio, the Quartermaster Reach Project is also being conducted and will benefit wetlands at the Presidio and Crissy Marsh. The Quartermaster Reach Project includes "daylighting" about 850 feet of stream currently in a subsurface culvert that discharges to Crissy Marsh (Presidio Trust 2012e, 1). The project will provide an ecological corridor and pedestrian trail through Quartermaster Reach that will connect a recently restored 450-foot stretch of stream and native habitat to the south (known as Thompson Reach) to Crissy Field Tidal Marsh (Presidio Trust 2012e, 1).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by

mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

Under the preferred alternative, the negligible impacts on wetland and aquatic vegetation from dogs at Crissy Field were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulatively, the preferred alternative would have negligible impacts on wetland and aquatic vegetation at or in the vicinity of Crissy Field.

CRISSY FIELD PREFERRED ALTERNATIVE F CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the VSCAs, physical restraint of dogs, and the existing fence would protect tidal marsh wetlands, which would be closed to dogs	Beneficial to no change, assuming compliance	Negligible cumulative impacts

SAN MATEO COUNTY SITES

Mori Point

Alternative A: No Action. Dogs are currently allowed on leash on all trails at Mori Point. This site has moderate to high visitor use by dog walkers. Although current GGNRA regulations require dogs to be leashed at Mori Point, unleashed dogs are often observed at the site. The NPS created four ponds at Mori Point to enhance the freshwater wetland habitat for California red-legged frog, and to provide foraging habitat for the San Francisco garter snake. Educational signs and fences have been placed around the ponds and wetland habitat at Mori Point to prevent direct impacts on frogs and frog habitat; however, dogs have occasionally been observed in the ponds.

Alternative A would result in continued negligible impacts on freshwater wetland vegetation because impacts would generally result in no measurable or perceptible changes in the plant community due to the exclusionary fences that protect wetland vegetation.

No permit system exists for commercial dog walking under alternative A. At Mori Point, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on wetland vegetation.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing,

and future restoration/creation projects at Mori Point and projects beyond the park boundaries will generally provide an overall benefit to wetland and aquatic habitats. The Sharp Park Golf Course, located in Pacifica in San Mateo County (adjacent to Mori Point) has a wetland complex, consisting of a lagoon (Laguna Salada), a pond (Horse Stable Pond), and a channel, which provides important habitat for the San Francisco garter snake and California red-legged frog (SFRPD 2009). Under the SNRAMP, plans at the golf course range from restoration to entirely natural habitat, to minor modifications that would improve habitat connectivity for frogs and snakes. The *Mori Point Restoration and Trail Plan* preserved and restored habitat by reducing threats to native plant communities and natural processes, providing habitat connectivity between upland and wetland areas, and developed a safe and sustainable trail system which improved recreational experiences and reduced impacts on park resources (NPS 2010e, 1, GGNPC 2016, 1). These projects would provide long-term beneficial impacts on wetland vegetation.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* could negatively affect wetland and aquatic resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wetlands.

The negligible impacts on wetland and aquatic vegetation from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative impacts on wetland vegetation under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts on freshwater wetlands	Exclusionary fences have been placed around the ponds and wetland habitat; however, dogs have occasionally been observed in ponds	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Mori Coastal Trail and the portion of beach owned by the NPS, but dogs would not be allowed on Old Mori Trail or the Pollywog Trail, which is located adjacent to the ponds. Impacts on freshwater wetland vegetation under alternative B would be negligible because impacts would result in no measurable or perceptible changes in the plant community due to the on-leash requirements, no dogs on the Pollywog Trail or Old Mori Trail, and the exclusionary fences that protect wetland and aquatic vegetation.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area,

it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on wetland vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Mori Point under alternative B were considered together with the effects of the projects mentioned above in alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physical restraint of dogs, fewer on-leash dog walking areas, and existing fences would protect wetlands	No change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking on Old Mori Trail, the Mori Coastal Trail, and the portion of beach owned by the NPS, but dogs would not be allowed on the Pollywog Trail, which is located adjacent to the ponds. In addition, the ponds and the vegetation surrounding them are enclosed by exclusionary fences. Impacts would be similar to those for alternative B. Therefore, assuming compliance, the impacts on freshwater wetland vegetation from dogs would be negligible because impacts would result in no measurable or perceptible changes in the plant community due to the on-leash requirements, no dogs on the Pollywog Trail, and the exclusionary fences that protect wetland and aquatic vegetation.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Mori Point under alternative C were considered together with the effects of the projects mentioned above in alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Existing fences and physical restraint of dogs would protect wetlands	No change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would prohibit dogs at the entire Mori Point site. Therefore, assuming compliance, alternative D would result in no impact on freshwater wetland vegetation.

Since dogs would not be allowed at Mori Point, there would be no impact from commercial dog walkers on the wetland and aquatic vegetation.

Cumulative Impacts. The lack of impacts on wetland and aquatic vegetation from dogs at Mori Point under alternative D was considered together with the effects of the projects mentioned above in alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails and beach as alternative C, with the addition of on-leash dog walking on the Pollywog Trail. The Pollywog Trail, which borders the freshwater wetland vegetation, would be open for dog walking, but there are exclusionary fences surrounding the ponds that would protect the vegetation. Therefore, assuming compliance, impacts on freshwater wetland vegetation from dogs would be negligible because impacts would result in no measurable or perceptible changes in the plant community due to the on-leash requirements and the exclusionary fences that protect wetland vegetation.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on freshwater wetland vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Mori Point under alternative E were considered together with the effects of the projects mentioned above in alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Existing fences and physical restraint of dogs would protect wetlands	No change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Mori Coastal Trail, Old Mori Trail, Pollywog Trail, Mori Headlands Trail, and the portion of beach owned by the NPS. The ponds and the vegetation surrounding them are enclosed by exclusionary fences. Assuming compliance, impacts on freshwater wetland vegetation from dogs would be negligible because impacts would result in no measurable or perceptible changes in the plant community due to the on-leash requirements and the exclusionary fences that protect wetland vegetation.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking activity is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Mori Point and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. The Sharp Park Golf Course, located in Pacifica in San Mateo County (adjacent to Mori Point) has a wetland complex, consisting of a lagoon (Laguna Salada), a pond (Horse Stable Pond), and a channel, which provides important habitat for the San Francisco garter snake and California red-legged frog (SFRPD 2009). Under the SNRAMP, plans at the golf course range from restoration to entirely natural habitat to minor modifications that would improve habitat connectivity for frogs and snakes. The *Mori Point Restoration and Trail Plan* preserved and restored habitat by reducing threats to native plant communities and natural processes, provided habitat connectivity between upland and wetland areas, and developed a safe and sustainable trail system which improved recreational experiences and reduced impacts on park resources (NPS 2010e, 1). These projects would provide long-term beneficial impacts on wetland vegetation.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* could negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wetlands.

The negligible impacts on wetland and aquatic vegetation from dogs at Mori Point under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative impacts on wetland vegetation under this alternative would be expected to be negligible.

MORI POINT PREFERRED ALTERNATIVE F CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Existing fences and physical restraint of dogs would protect wetlands	No change, assuming compliance	Negligible cumulative impacts

IMPACTS TO NATIVE HARDWOOD FORESTS AND DOUGLAS-FIR/COAST REDWOODS BY SITE AND ALTERNATIVE

In the planning area at GGNRA, native hardwood forests exist at Oakwood Valley, Alta Trail/Orchard Fire Road/Pacheco Fire Road, and Fort Baker. The Douglas-fir and coast redwood community is found sporadically in portions of Homestead Valley and in Oakwood Valley but outside the area accessed by dogs; therefore, impacts on this community at these sites is not discussed further in this section. Therefore, the native hardwood forest and/or Douglas-fir/coast redwood communities exist at Oakwood Valley, Alta Trail/Orchard Fire Road/Pacheco Fire Road, and Fort Baker, and impacts on these communities at these sites are discussed in more detail in the paragraphs that follow.

Alta Trail/Orchard Fire Road/Pacheco Fire Road

Alternative A: No Action. Under current conditions, dogs are allowed under voice control or on leash on the trails and roads from Marin City to Oakwood Valley. These areas experience high use by commercial dog walkers (table 10), with typically 5 to 12 dogs under voice control per commercial walker. However, native hardwood communities occur adjacent to Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

Under alternative A, physical damage to vegetation from dogs through trampling, digging, and dog waste would continue to occur since dogs would be allowed under voice control and there is a higher likelihood of dogs going off the trail and fire roads than if they were on leash. Impacts in these areas could prevent the growth of vegetation or allow the establishment of non-native invasive species. These impacts would be considered long term, minor, and adverse due to the high use by commercial dog walkers and because effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for commercial dog walking under alternative A. However, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road is common, with commercial dog walkers having 5 to 12 dogs under voice control at one time. Commercial dog walking would continue to create long-term minor adverse impacts on vegetation. Dogs under voice control would continue to disturb vegetation due to trampling, digging, and dog waste.

Cumulative Impacts. Projects and actions in and near Alta Trail, Orchard Fire Road, and Pacheco Fire Road were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road occurs regularly. Therefore, the interim compendium amendment would have a beneficial effect on native hardwood forests by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and dog waste.

The long-term minor adverse impacts on native hardwood communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects and the interim permitting program should reduce some of the adverse impacts on native hardwood communities from alternative A. Therefore, cumulative impacts on native hardwood communities under this alternative would be expected to be negligible.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Alta Trail to Orchard Fire Road and on Orchard and Pacheco fire roads. Impacts on native hardwood vegetation could include physical damage from trampling as well as nutrient addition from dog waste and urine. Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this habitat supports the growth of native vegetation. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively reduced area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on native hardwood vegetation from on-leash dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on native hardwood vegetation from dogs at the site. Overall impacts on native hardwood vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Projects and actions in and near Alta Trail, Orchard Fire Road, and Pacheco Fire Road were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and

enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

The negligible impacts on native hardwood communities from dogs at Alta Trail/Orchard Fire Road/Pacheco Fire Road under this alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other restoration projects combined with the negligible impacts from alternative B would result in negligible impacts on native hardwood communities at this park site.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE B CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits could restrict use by time and area. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road. Impacts on native hardwood vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on native hardwood vegetation from dogs at the site. Overall impacts on native hardwood vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on native hardwood vegetation would be expected. Impacts on native hardwood vegetation from commercial dog walkers would be similar to impacts from other dog walkers; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Under alternative C, the cumulative impacts on native hardwood communities at this park site would be the same as those under alternative B: negligible cumulative impacts.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, assuming compliance, no impact on native hardwood vegetation from dogs would occur at this site.

Since dogs would not be allowed at Alta Trail, Orchard Fire Road, and Pacheco Fire Road, there would be no impact from commercial dog walkers on native hardwood forest and Douglas-fir/coast redwood vegetation.

Cumulative Impacts. The lack of impacts on native hardwood communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative D was considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration and trail rehabilitation projects combined with the lack of impacts on native hardwood communities from alternative D would result in beneficial cumulative impacts.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Under alternative E on-leash dog walking would be allowed on the Alta Trail from Donahue Street to the junction with the Morning Sun Trail and on the Orchard and Pacheco fire roads. Impacts on native hardwood vegetation could include physical damage from trampling as well as nutrient addition from dog waste and urine. Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this habitat supports the growth of native vegetation, some of it rare. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on native hardwood vegetation from on-leash dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits could restrict use by time and area. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road, but permit holders would only be allowed as far as the intersection of Alta Trail and Orchard Fire Road. Impacts on native

hardwood vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on native hardwood vegetation from dogs at the site. Impacts on native hardwood vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. The negligible impacts on native hardwood communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative E were considered together with the effects of the actions mentioned above in alternative B. The benefits to vegetation from the park stewardship programs and other restoration projects in the area of this site combined with the negligible impacts from alternative E would result in negligible cumulative impacts.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative E, allowing on-leash dog walking on the Alta Trail from Donahue Street to the junction with the Morning Sun Trail and on the Orchard and Pacheco fire roads. Impacts on native hardwood vegetation could include physical damage from trampling as well as nutrient addition from dog waste and urine. Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this habitat supports the growth of native vegetation, some of it rare. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively reduced area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on native hardwood vegetation from on-leash dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits could restrict use by time and area. Permits would be allowed for Alta Trail from Donahue Street to the intersection with Orchard Trail. Impacts on vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on native hardwood vegetation from dogs at the site. Overall impacts on native hardwood vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Projects and actions in and near Alta Trail, Orchard Fire Road, and Pacheco Fire Road were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Alta Trail/Orchard Fire Road/Pacheco Fire Road. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

Under the preferred alternative, the negligible impacts on native hardwood communities from dogs at Alta Trail/Orchard Fire Road/Pacheco Fire Road under this alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other restoration projects combined with the negligible impacts from the preferred alternative would result in negligible impacts on native hardwood communities at this park site.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD PREFERRED ALTERNATIVE F CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Oakwood Valley

Alternative A: No Action. Currently, dogs are allowed under voice control or on leash on the Oakwood Valley Fire Road and Oakwood Valley Trail from the junction with the fire road to the junction with Alta Trail. On-leash dog walking is also available on the Oakwood Valley Trail from the trailhead to the junction with Oakwood Valley Fire Road. However, many dog walkers allow their dogs off leash as soon as they enter the site. This site is moderately used by dog walkers (table 10) and the number of commercial dog walkers using this site is relatively low. Oakwood Valley contains native hardwood vegetation; this site also contains Douglas-fir and coast redwood communities, but these occur outside the areas accessed by dogs.

Under alternative A, physical disturbance from dog activities would continue to occur along the fire road and trail and in off-trail areas throughout the site. Due to their nature, dogs are not expected to stay on the fire road/trail. Since dogs would be allowed under voice control in some areas of the site, there is a higher likelihood that dogs would go off trail than if they were on leash, creating impacts on native hardwood vegetation in adjacent areas. Therefore, these impacts would be considered long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for commercial dog walking under alternative A. At Oakwood Valley, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/ Urban Interface Initiative on private lands could also impact Oakwood Valley.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Oakwood Valley is uncommon. However, the interim compendium amendment would have a beneficial effect on native hardwood forests by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and dog waste.

The long-term minor adverse impacts on native hardwood communities from dogs at Oakwood Valley under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the interim permitting program should reduce some of the adverse impacts on native hardwood communities from alternative A. Therefore, cumulative impacts on native hardwood communities under this alternative would be expected to be negligible.

OAKWOOD VALLEY ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed on the Oakwood Valley Fire Road and the Oakwood Valley Trail from the junction of the trail and fire road. Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this habitat supports the growth of existing vegetation, which would be affected by trampling and dog waste. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on vegetation from on-leash dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/ Urban Interface Initiative on private lands could also impact Oakwood Valley.

The negligible impacts on native hardwood communities from dogs at Oakwood Valley under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other restoration projects combined with the negligible impacts from alternative B would result in negligible impacts on native hardwood communities at this park site.

OAKWOOD VALLEY ALTERNATIVE B CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C proposes a VSCA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with continuous fencing to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to a new gate at Alta Trail. Dogs under voice and sight control in the VSCA on the Oakwood Valley Fire Road would have access to the land between the edge of the trail and the fence (LOD area). The vegetation in this area would be affected by physical disturbance from dog activities. Dogs in the VSCA would be confined to a smaller area, potentially increasing the impacts on the adjacent natural habitat and vegetation. There would be impacts from locating and constructing the fence and gates that would extend beyond the VSCA. After the VSCA is open to dogs, the area would be devoid of any vegetation; therefore, there would be impacts in the VSCA where the shoulders of the trails, which are currently vegetated, would become part of the VSCA. There is also a potential for an increase in nutrient loading from dog waste due to having more dogs confined to a smaller area directly adjacent to natural habitat. Dogs would affect vegetation in the LOD area of the on-leash portion of Oakwood Valley Trail as well. Impacts would result from physical disturbance, such as trampling, digging, and dog waste. Impacts on vegetation in the LOD area and VSCA would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area and the VSCA would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash in all areas outside the VSCA would protect vegetation off trail, and the areas in the VSCA would be fenced. Therefore, assuming compliance, the overall impact on native hardwood vegetation from dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. The negligible impacts on native hardwood communities from dogs at Oakwood Valley under alternative C were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the park stewardship programs and other restoration projects combined with the negligible impacts from alternative C would result in negligible impacts on native hardwood communities at this park site.

OAKWOOD VALLEY ALTERNATIVE C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; LOD area and VSCAs are a small portion of the entire site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B, and impacts would also be the same. Impacts on native hardwood vegetation in the LOD area would be long term, minor, and adverse and would be caused by trampling and dog waste; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on native hardwood vegetation from on-leash dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on native hardwood vegetation.

Cumulative Impacts. Under alternative D, the cumulative impacts on native hardwood communities at this park site would be the same as those under alternative B: negligible cumulative impacts.

OAKWOOD VALLEY ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E proposes a VSCA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with non-continuous fencing where needed to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to a new gate at Alta Trail. Alternative E would have the same impacts as alternative C, assuming compliance: long term, minor, and adverse in the LOD area and VSCA and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on native hardwood communities at this park site would be the same as those under alternative C: negligible cumulative impacts

OAKWOOD VALLEY ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and LOD areas and VSCAs are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Oakwood Valley Fire Road, and on the Oakwood Valley Trail from the junction with the fire road to the junction with Alta Trail. On-leash dog walking would also be allowed on the short segment of the Rhubarb Trail, which allows visitors from the Tennessee Valley Road community to access to the Oakwood Valley Fire Road without having to drive there. Dogs would affect vegetation in the LOD area of the on-leash portion of Oakwood Valley Trail and the Oakwood Valley Fire Road. Impacts would result from physical disturbance, such as trampling and dog waste. Impacts on vegetation in the LOD area would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail areas. Therefore, assuming compliance, the overall impact on native hardwood vegetation from dog

walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/ Urban Interface Initiative on private lands could also impact Oakwood Valley.

The negligible impacts on native hardwood communities from dogs at Oakwood Valley under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other restoration projects combined with the negligible impacts from the preferred alternative would result in negligible impacts on native hardwood communities at this park site.

OAKWOOD VALLEY PREFERRED ALTERNATIVE F CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; LOD areas are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Fort Baker

Alternative A: No Action. Currently, dogs are required to be on leash throughout Fort Baker. Dogs are not allowed on the Chapel Trail or the pier. This site experiences low dog walking use, although there were 52 leash law violations at this site from 2008 through 2011 and an additional 29 violations between 2012 and 2016 (tables 18a and 18b). Dogs have been observed off leash at the Parade Ground, Drown Fire Road, Battery Yates Trail, and behind the Bay Area Discovery Museum (NPS 2009c). Dogs off leash on trails/fire roads can access adjacent habitat, where viable plant communities exist. Impacts on this vegetation would include physical disturbance through trampling and digging, as well as nutrient addition, which would prevent the growth of new vegetation. Since compliance has been an issue at this site, it is likely that many dogs are off leash and go beyond the trails and fire roads.

Under alternative A, long-term minor adverse impacts would continue to occur on the native hardwood vegetation that occurs in the northeast portion of the Fort Baker site because impacts would be measurable and perceptible but would be localized in a relatively small area.

No permit system exists for commercial dog walking under alternative A. At Fort Baker, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Fort Baker.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Fort Baker is uncommon. However, the interim compendium amendment would have a beneficial effect on native hardwood forests by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and dog waste.

The long-term minor adverse impacts on native hardwood communities from dogs at Fort Baker under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the projects provided by the park stewardship programs and the interim permitting program should reduce some of the adverse impacts on native hardwood communities from alternative A. Therefore, cumulative impacts on native hardwood communities under this alternative would be expected to be negligible.

FORT BAKER ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused by physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Drown Fire Road, the Bay Trail (not including Battery Yates Trail), Vista Point Trail (to be built), the Lodge/Conference Center Grounds, and the Parade Ground. Dogs would not be allowed on the Battery Yates Trail as part of this alternative, due to the presence of mission blue butterfly habitat. Impacts from dogs would result through physical disturbance from trampling and nutrient addition, which would prevent the growth of new vegetation. The impacts in the LOD area under alternative B would be long

term, minor, and adverse because the effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on native hardwood vegetation from on-leash dog walking at Fort Baker would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Fort Baker.

The negligible adverse impacts on native hardwood communities from dog activities at this site under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other restoration projects combined with the negligible impacts from alternative B would result in negligible impacts on native hardwood communities at this park site.

FORT BAKER ALTERNATIVE B CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, with the addition of on-leash dog walking on the Battery Yates Trail, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits could restrict use by time and area. Permits would be allowed for Fort Baker excluding Drown Fire Road. Impacts on vegetation from permit

holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on native hardwood communities at this park site would be the same as those under alternative B: negligible cumulative impacts.

FORT BAKER ALTERNATIVE C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the Lodge/Conference Center Grounds, Vista Point Trail (to be built), and on the Bay Trail (excluding the Battery Yates Trail), and no dogs would be allowed on the Parade Ground. Impacts in the LOD area would be long term, minor, and adverse since these areas support the growth of existing vegetation and would be affected by trampling and dog waste. Effects would be measurable and perceptible, but would be localized in a relatively small area. Even though alternative D would allow less dog access at the site, the difference in dog impacts between alternatives D and B is not considered large enough to cause a change in the intensity of the impact due to the developed nature of the site.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on native hardwood vegetation from on-leash dog walking at Fort Baker would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on native hardwood vegetation.

Cumulative Impacts. The negligible adverse impacts on native hardwood communities from dog activities at this site under alternative D were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the park stewardship programs and other restoration projects combined with the negligible impacts from alternative D would result in negligible impacts on native hardwood communities at this park site.

FORT BAKER ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits could restrict use by time and area. Permits would be allowed for Fort Baker excluding Drown Fire Road. Impacts on native hardwood vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on native hardwood communities at this park site would be the same as those under alternative B: negligible cumulative impacts.

FORT BAKER ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Bay Trail, the Lodge/Conference Center Grounds, the Parade Ground, Fort Baker Trail between Sommerville Road and East Road, and the parking lots at the Bay Area Discovery Museum and connecting trails. Impacts from dogs would result through physical disturbance from trampling and nutrient addition, which would prevent the growth of new vegetation. The impacts in the LOD area would be long term, minor, and adverse because the effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on native hardwood vegetation from on-leash dog walking at Fort Baker would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits could restrict use by time and area. Walking four to six dogs with an NPS-issued permit would be allowed in all of the same areas except the lands and trails surrounding the Cavallo Point Lodge. Permits could further restrict use by time and area. Impacts on vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Fort Baker.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on native hardwood forest communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on native hardwood communities from dog activities at this site under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other restoration projects combined with the negligible impacts from the preferred alternative would result in negligible impacts on native hardwood communities at this park site.

FORT BAKER PREFERRED ALTERNATIVE F CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

IMPACTS TO RIPARIAN FOREST AND STREAM CORRIDORS BY SITE AND ALTERNATIVE

Riparian plant communities in GGNRA include streamside corridors of forests, shrubs, and herbaceous vegetation that tolerate moist conditions. The sites in GGNRA that possess riparian habitat include: Easkoot Creek at Stinson Beach, Redwood Creek at Muir Beach in Marin County, Marin Headlands Trails along the Rodeo Valley Trail Corridor from Rodeo Beach to Capehart Housing, and Lobos Creek at Baker Beach. The area at the Lobos Creek inlet that supports riparian vegetation is generally not used by visitors with dogs and is not affected by this final plan/EIS (NPS 2009k). At Easkoot Creek, the creek

is densely vegetated with riparian plant species and generally difficult to access. Therefore, impacts on riparian vegetation as a result of alternatives A through F at both Lobos Creek at Baker Beach and Easkoot Creek at Stinson Beach would be negligible and are not discussed further in this section. Below and discussed in more detail include the following sites: Muir Beach (Redwood Creek) Marin Headlands Trails (along the Rodeo Valley Trail Corridor from Rodeo Beach to Capehart Housing), and Rancho Corral de Tierra.

MARIN COUNTY SITES

Muir Beach

Alternative A: No Action. The Lower Redwood Creek restoration project restored the channel of Redwood Creek, restored the lagoon, created habitat for sensitive species, removed artificial fill from the floodplain, and removed nonnative species, and planted native riparian and wetland plants. (NPS 2013c). At Muir Beach, riparian forest habitat surrounds Redwood Creek throughout the site and extends to the parking lot. Under alternative A, on-leash dog walking is allowed on the Muir Beach Trail, Kaashi Way from the beach to the Coastal Trail, and the parking lot; dogs are allowed on leash or under voice control on the beach. This site has moderate to high visitor use by beachgoers and hikers (table 10). The park has closed the lagoon and Redwood Creek, although it has been observed that these closures have been violated and dogs have accessed Redwood Creek (appendix G).

Under alternative A, dogs in the parking lot could enter the areas containing riparian forest. As a result, continued long-term minor adverse impacts on riparian vegetation would occur under this alternative because the integrity of the plant community could be negatively affected by dogs through trampling, digging, and dog waste; these effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for commercial dog walking under alternative A. At Muir Beach, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on riparian vegetation.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* plan restored channel function to reduce flooding and reconnect the creek to its floodplain, as well as expanding riparian vegetation at the Banducci site (NPS 2010b, 1). The *Dias Ridge Restoration and Trail Improvement Project* realigned trail segments and restored degraded areas on Dias Ridge above Muir Beach (NPS 2016, 1). Additional vegetation benefits would be expected from the *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project, from the restoration and enhancement of ecological processes near the mouth of Redwood Creek as well as the enhancement of habitat and improvements s to erosion and sedimentation conditions (NPS 2009j, 1). The park stewardship programs initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010a, 1).

Generally, construction and development projects that affect the riparian forest and stream corridor communities, such as the GGNRA *Long-range Transportation Plan Update*, require project-specific mitigation measures to address impacts on these communities and their wildlife. Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005b). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level, and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005b). Loss of riparian vegetation can lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005b), which can ultimately affect the fisheries in the stream.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Muir Beach is uncommon. However, the interim compendium amendment would have a beneficial effect on riparian plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and dog waste.

The long-term minor adverse impacts on riparian vegetation from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation and improvement projects and the interim permitting program should reduce some of the adverse impacts on riparian vegetation from alternative A. Therefore, cumulative impacts on riparian vegetation under this alternative would be expected to be negligible.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Redwood Creek has been closed to dogs by the NPS to protect sensitive habitat in the watershed, but there is no physical barrier and off-leash dogs enter the riparian areas as well as the creek; this habitat would continue to be subject to impacts from dogs through trampling, digging, and dog waste	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking in the parking area, the Muir Beach Trail including the pedestrian bridge, the portion of Kaashi Way from the bridge to the beach, and the beach. The riparian forest located adjacent to Muir Beach would be generally protected by physically restraining dogs on leash. Riparian forest vegetation located in the 6-foot areas adjacent to the parking lot and the short segment of Kaashi Way (LOD area) would receive long-term minor adverse impacts from dogs trampling in vegetated areas; nutrient addition from dog waste would also occur. The effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area surrounding the parking lot would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would

protect vegetation off trail, and trails in riparian habitat constitute a small area in comparison to the entire site. Therefore, assuming compliance, the overall impacts on riparian vegetation from on-leash dog walking at Muir Beach would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on riparian vegetation.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* plan restored channel function to reduce flooding and reconnect the creek to its floodplain, as well as expanding riparian vegetation at the Banducci site (NPS 2010b, 1). The *Dias Ridge Restoration and Trail Improvement Project* realigned trail segments and restored degraded areas on Dias Ridge above Muir Beach (NPS 2016, 1). Additional vegetation benefits would be expected from the *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project, from the restoration and enhancement of ecological processes near the mouth of Redwood Creek as well as the enhancement of habitat and improvements s to erosion and sedimentation conditions (NPS 2009j, 1). The park stewardship programs initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010a, 1).

Generally, construction and development projects that affect the riparian forest and stream corridor communities, such as the GGNRA *Long-range Transportation Plan Update*, require project-specific mitigation measures to address impacts on these communities and their wildlife. Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005b). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level, and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005b). Loss of riparian vegetation can lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005b), which can ultimately affect the fisheries in the stream.

The negligible impacts on riparian vegetation from dogs at Muir Beach under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation and improvement projects combined with the negligible impacts from alternative B would result in negligible cumulative impacts on riparian vegetation at this park site.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail; trails and the LOD area are a small portion of the site; trails in riparian habitat are a small area in comparison to the entire site; trails generally receive low to moderate use	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on riparian vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on riparian vegetation at this park site would be the same as those under alternative B: negligible cumulative impacts.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail; trails and the LOD area are a small portion of the site; trails in riparian habitat are a small area in comparison to the entire site; trails generally receive low to moderate use	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. In the vicinity of Muir Beach, alternative D would allow on-leash dog walking in the parking area and on the Muir Beach Trail. The bridge and path to beach and the beach itself would be closed to dogs. The parking lot is surrounded by riparian forest; therefore, impacts would be expected to be similar to those described for alternative B. Riparian forest vegetation located in the 6-foot area adjacent to the parking lot (LOD area) would receive long-term minor adverse impacts from dogs trampling vegetated areas; nutrient addition from dog waste would also occur. The effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail,

and trails in riparian habitat constitute a small portion of the site. Therefore, assuming compliance, the overall impact on riparian vegetation from on-leash dog walking at Muir Beach would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on riparian vegetation.

Cumulative Impacts. The negligible impacts on riparian vegetation from dogs at Muir Beach under alternative D was considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the rehabilitation and improvement projects combined with the negligible impacts from alternative D would result in negligible cumulative impacts on riparian vegetation at this park site.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail; trails and the LOD area are a small portion of the site; trails in riparian habitat are a small area in comparison to the entire site; trails generally receive low to moderate use	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Under alternative E at Muir Beach, the parking area, the Muir Beach Trail including the pedestrian bridge, and the portion of Kaashi Way from the bridge to the beach would be open to on-leash dog walking. The portion of Muir Beach south of the access path would be a designated VSCA, and dogs would be prohibited on the remainder of the beach north of the access path. The VSCA designated as part of this alternative, the short segment of Kaashi Way, and the parking lot are located immediately adjacent to riparian forest. Riparian forest vegetation located in the 6-foot area adjacent to the trail and parking lot (LOD area) would receive long-term minor adverse impacts from dogs trampling vegetated areas; nutrient addition from dog waste would also occur. The effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash in areas beyond the VSCA would protect vegetation off trail, and trails in riparian habitat constitute a small area in comparison to the entire site. Therefore, assuming compliance, the overall impacts on riparian vegetation from on-leash dog walking at Muir Beach would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on riparian vegetation.

Cumulative Impacts. The negligible impacts on riparian vegetation from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the restoration and improvement projects combined with the negligible impacts from alternative E would result in negligible cumulative impacts on riparian vegetation at this park site.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail; trails and the LOD area and VSCAs are a small portion of the entire site; trails in riparian habitat are a small area in comparison to the entire site; trails generally receive low to moderate use	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the parking area, the Muir Beach Trail including the pedestrian bridge, the beach, and Kaashi Way from the beach to Pacific Way. The tidal lagoon and Redwood Creek would remain closed to dogs, and fencing would be installed along the dunes, the lagoon, and Kaashi Way as needed to protect resources. The riparian forest located adjacent to Muir Beach would be generally protected by physically restraining dogs on leash. Riparian forest vegetation located in the 6-foot area adjacent to portions of Kaashi Way and parking lot (LOD area) would receive long-term minor adverse impacts from dogs trampling vegetated areas; nutrient addition from dog waste would also occur. The effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail, and trails in riparian habitat constitute a small area in comparison to the entire site. Therefore, assuming compliance, the overall impacts on riparian vegetation from on-leash dog walking at Muir Beach would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits to walk more than three dogs, with a maximum of six, would be issued. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on riparian vegetation.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and

stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain, as well as expanding riparian vegetation at the Banducci site (NPS 2010d, 1). The *Dias Ridge Restoration and Trail Improvements* realigned trail segments and restored degraded areas on Dias Ridge above Muir Beach (NPS 2016, 1). Additional vegetation benefits would be expected from the *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project, through the restoration and enhancement of ecological processes near the mouth of Redwood Creek as well as the enhancement of habitat and improvements to erosion and sedimentation conditions (NPS 2009j, 1). The park stewardship programs initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010a, 1).

Generally, construction and development projects that affect the riparian forest and stream corridor communities, such as the GGNRA *Long-range Transportation Plan Update*, require project-specific mitigation measures to address impacts on these communities and their wildlife. Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005b). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005b). Loss of riparian vegetation can lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005b), which can ultimately affect the fisheries in the stream.

The negligible impacts on riparian vegetation from dogs at Muir Beach under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation and improvement projects combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on riparian vegetation at this park site.

MUIR BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail; trails and the LOD area are a small portion of the site; trails in riparian habitat are a small area in comparison to the entire site; trails generally receive low to moderate use	Beneficial, assuming compliance	Negligible cumulative impacts

Marin Headlands Trails

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed along the Coastal Trail from Hill 88 to Muir Beach, the Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, and Marin Drive. Dog walking under voice control (or on leash) is allowed along other portions of the Coastal Trail (Golden Gate Bridge to Hill 88, including portions of the Lagoon Loop Trail); the Coastal, Wolf Ridge, and Miwok Trail Loop; and the Old Bunker Fire Road

Loop. These trails experience low to moderate use by dog walkers. Dog-related incidents are high at this site with a total of 269 from 2008 through 2011, and another 232 violations between 2012 and 2016 (tables 17a and 17b). Within the Marin Headlands Trails, the Rodeo Valley Trail Corridor parallels riparian habitat for its entire length, and the Lagoon Loop Trail both passes through and is adjacent to riparian habitat along both sides of Rodeo Lagoon; portions of both of these trails are currently open to dogs under voice control. Physical disturbance and nutrient addition are currently happening along the trails and in off-trail areas due to unleashed dogs.

Because only a portion of the entire site supports riparian vegetation in areas that would be open to dogs, alternative A would result in continued long-term minor adverse impacts on the riparian community as a result of dogs through trampling, digging, and dog waste; effects would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative A, no permit system exists for dog walking. At the Marin Headlands Trails, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on riparian vegetation.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Generally, construction and development projects that affect the riparian forest and stream corridor communities, such as the GGNRA *Long-range Transportation Plan*, require project-specific mitigation measures to address impacts on these communities and their wildlife. Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005b). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005b). Loss of riparian vegetation can lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005b), which can ultimately affect the fisheries in the stream.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Marin Headlands Trails is uncommon. However, the interim compendium amendment would have a beneficial effect on riparian plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical disturbance and nutrient addition from dog waste.

The long-term minor adverse impacts on riparian vegetation from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation and restoration projects and the interim permitting program

should reduce some of the adverse impacts on riparian vegetation from alternative A. Therefore, negligible cumulative impacts on riparian vegetation would result from alternative A.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Off-leash dogs would affect riparian vegetation along the Lower Rodeo Valley Trail Corridor and along the Lagoon Loop Trail through trampling, digging, and dog waste; nutrient addition would also occur outside the LOD area	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs on the trails at the Marin Headlands. Not allowing dog walking on the Marin Headlands Trails would eliminate physical disturbance by dogs and nutrient addition from dog waste. Therefore, assuming compliance, alternative B would result in no impact on riparian vegetation at the site.

Since dogs would not be allowed on the Marin Headlands Trails, there would be no impact from commercial dog walkers on the riparian vegetation community.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Generally, construction and development projects that affect the riparian forest and stream corridor communities, such as the GGNRA *Long-range Transportation Plan*, require project-specific mitigation measures to address impacts on these communities and their wildlife. Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005b). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005b). Loss of riparian vegetation can lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005b), which can ultimately affect the fisheries in the stream.

The lack of impacts on riparian vegetation from dogs at the Marin Headlands Trails under alternative B was considered together with the effects of the projects mentioned above. The beneficial effects from the

rehabilitation and restoration projects combined with the lack of impacts on riparian vegetation from alternative B would result in beneficial cumulative impacts on riparian vegetation.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, which runs from the Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads, via the North Lagoon Loop Trail, Miwok Trail, and Rodeo Valley Trail, and includes the trail connector to the Smith Road Trailhead; the Batteries Loop Trail; and the Old Bunker Fire Road Loop. Within the Marin Headlands Trails, the Rodeo Valley Trail Corridor parallels riparian habitat for its entire length, and the North Lagoon Loop Trail both passes through and is adjacent to riparian habitat along both sides of Rodeo Lagoon. Although only a portion of the Rodeo Valley Trail is currently open to dogs, under alternative C an additional section in riparian habitat would be opened to on-leash dogs on the multi-use trail and bridge at Capehart Housing in upper Rodeo Valley that connects the Rodeo Valley Trail to Bunker Road. The North Lagoon Loop Trail would allow on-leash dog walking. Impacts in the LOD area would be long term, minor, and adverse since the vegetation in these areas would be affected by trampling and dog waste; effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a fair portion of the site as a whole. However, physically restraining dogs on leash would protect habitat off trail along the Lower Rodeo Valley Trail Corridor. Therefore, assuming compliance, alternative C would result in overall negligible impacts on riparian vegetation because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under alternative C, permits to walk more than three dogs, with a maximum of six, would not be issued for the Marin Headlands Trails site. Since commercial dog walking activity is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on riparian vegetation.

Cumulative Impacts. The negligible impacts on riparian vegetation from dogs at the Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the rehabilitation and restoration projects combined with the negligible impacts on riparian vegetation from alternative C would result in negligible cumulative impacts on riparian vegetation.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail along the Lower Rodeo Valley Trail Corridor, which supports riparian habitat; LOD area and Lower Rodeo Valley Trail Corridor make up a fair portion of the entire site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B (dogs would be prohibited on the trails). Therefore, assuming compliance, no impact on riparian vegetation would occur as a result of alternative D.

Since dogs would not be allowed on the Marin Headlands Trails, there would be no impact from commercial dog walkers on the riparian vegetation community.

Cumulative Impacts. Under alternative D, the cumulative impacts on riparian vegetation at this park site would be the same as those under alternative B: beneficial cumulative impacts.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Conzelman Coastal Trail from Highway 101 to the McCullough intersection and then on the Coastal Trail Bike Route, including Julian Road, to the Rodeo Beach parking lot. On-leash dog walking would also be available on the Old Bunker Fire Road Loop which includes a section of the Coastal trail; the Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, Marin Drive, Rodeo Avenue Trail, and Morning Sun Trail. Within the Marin Headlands Trails, the Rodeo Valley Trail Corridor parallels riparian habitat for its entire length, and the Lagoon Loop Trail both passes through and is adjacent to riparian habitat along the sides of Rodeo Lagoon. This alternative would allow dog access only on the perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. Impacts in the LOD area would be long term, minor, and adverse since some of the riparian vegetation along the Lower Rodeo Valley Trail Corridor would be affected by trampling and dog waste. Effects would be measurable and perceptible, but would be localized in a relatively small area. Even though alternative E would allow more dog access at the site, the difference in dog use between alternatives E and C is not considered large enough to cause a change in the intensity of the impacts relative to the area of the site.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. However, physically restraining dogs would protect habitat off trail along the Lower Rodeo Valley Trail Corridor and along the Lagoon Loop Trail. Therefore, assuming compliance, alternative E would result in overall negligible impacts on riparian vegetation because impacts would result in no measurable or perceptible changes in the plant community. Although more

trails would be available to dogs in comparison to alternative C, the overall impact on vegetation from on-leash dog walking would still be negligible, assuming compliance.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under alternative E, permits to walk more than three dogs, with a maximum of six, would not be issued for the Marin Headlands Trails site. Since commercial dog walking is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on riparian vegetation.

Cumulative Impacts. The negligible impacts on riparian vegetation from dogs at the Marin Headlands Trails under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the rehabilitation and restoration projects combined with the negligible impacts on riparian vegetation from alternative E would result in negligible cumulative impacts on riparian vegetation.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail along the Lower Rodeo Valley Trail Corridor and the Lagoon Trail, which supports riparian habitat; LOD area and Lower Rodeo Valley Trail Corridor make up a fair portion of the entire site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. On-leash dog walking would be allowed along the Lower Rodeo Valley Trail Corridor, which extends from the Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via the North Lagoon Loop Trail, Miwok Trail, and the Rodeo Valley Trail, and includes the connector trail from Rodeo Valley Trail to the Smith Road Trailhead. On-leash dog walking would also be available on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), the Batteries Loop Trail, Rodeo Avenue Trail, and Morning Sun Trail. Within the Marin Headlands Trails, the Rodeo Valley Trail Corridor parallels riparian habitat for its entire length, and the Lagoon Loop Trail both passes through and is adjacent to riparian habitat along both sides of Rodeo Lagoon. Although only a portion of the Rodeo Valley Trail is currently open to dogs, under the preferred alternative, an additional section in riparian habitat would be opened to on-leash dogs on the multi-use trail and bridge at Capehart Housing in upper Rodeo Valley which connects the trail to Bunker Road. Therefore, impacts in the LOD area would be long term, minor, and adverse since the vegetation in these areas will be affected by trampling and dog waste; effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a fair portion of the site as a whole. However, physically restraining dogs on leash would protect habitat off trail along the Lower Rodeo Valley Trail Corridor. Therefore, assuming compliance, the preferred alternative would result in an overall negligible impact on riparian vegetation because impacts would result in no measurable or perceptible changes in the plant community.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under the preferred alternative, permits would be issued allowing dog walkers to have more than three dogs on a short segment of the North Lagoon Loop Trail. Allowing dog walkers with more than three dogs on the North Lagoon Loop Trail from the Rodeo Beach parking lot to the pedestrian bridge creates a loop with the permitted areas allowed under the preferred alternative for Rodeo Beach. Since commercial dog walking activity is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on riparian vegetation.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Generally, construction and development projects that affect the riparian forest and stream corridor communities, such as the GGNRA *Long-range Transportation Plan Update*, require project-specific mitigation measures to address impacts on these communities and their wildlife. Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005b). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005b). Loss of riparian vegetation can lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005b), which can ultimately affect the fisheries in the stream.

The negligible impacts on riparian vegetation from dogs at the Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation and restoration projects combined with the negligible impacts on riparian vegetation from the preferred alternative would result in negligible cumulative impacts on riparian vegetation.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE F CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail along the Lower Rodeo Valley Trail Corridor, which supports riparian habitat; LOD area and Lower Rodeo Valley Trail Corridor make up a fair portion of the entire site	Beneficial, assuming compliance	Negligible cumulative impacts

Rancho Corral de Tierra

Alternative A: No Action. Riparian habitat is found along the creeks, streams, and springs at Rancho Corral de Tierra, and trails cut across riparian forest in some areas. Currently, on-leash dog walking is allowed at Rancho Corral de Tierra. Staff working regularly at Rancho characterize use by dog walkers as moderate overall with moderate to high use in the Montara area, and compliance with the leash law is generally low. At Rancho, NPS rangers have observed off-leash dogs running in areas with potentially sensitive habitat.

Under alternative A, dogs could enter the areas containing riparian forest. As a result, continued long-term minor adverse impacts on riparian vegetation would occur under this alternative because the integrity of the plant community could be negatively affected by dogs through trampling, digging, and dog waste; these effects would be measurable and perceptible, but visitor use at the site is generally low to moderate, and impacts from on-leash dogs would be localized in a relatively small area. According to information from the Montara Dog Group and subsequent staff observations, dog walkers, particularly off-leash dog walkers, primarily use the lower elevations of the site at both the Montara and El Granada areas. The terrain at El Granada is particularly steep and challenging, thus dog walking use in that area appears to be concentrated mostly in the lower elevations. Although the Montara area is less steep, visitor use there is similarly concentrated in the lower elevations, but some dog walkers in the Montara area do use trails that connect to the top of the Rancho site. Noncompliant dogs off leash would continue to access riparian and forest and stream corridors.

No permit system exists for dog walking under alternative A. Commercial dog walkers typically use the El Granada area off of Coral Reef Avenue; however, commercial dog walking is considered a low use at the site overall. Therefore, commercial dog walking would have negligible impacts on riparian forest at this site.

Cumulative Impacts. Projects and actions in and near Rancho were considered for the cumulative impacts analysis (appendix K). Since the Rancho Corral de Tierra site has been transferred to NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking.

The GGNRA Maintenance Division conducts many ongoing functions throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites. Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involved constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica

and Montara (County of San Mateo 2016d, 1). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The long-term minor adverse impacts on riparian forest from dogs at Rancho Corral de Tierra under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the park stewardship programs would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for these park sites will focus on the results of the impact analysis for this alternative. The beneficial effects from the park stewardship programs combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts on the riparian forest.

RANCHO CORRAL DE TIERRA ALTERNATIVE A CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Creek and waterbodies are closed to dogs by the NPS, but there is no physical barrier and off-leash dogs have been observed at this site; this habitat would continue to be subject to impacts from dogs through trampling, digging, and dog waste	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. On-leash dog walking would be allowed on designated trails in two areas open to dog walking near Montara and El Granada, which were identified by the local dog walking group as key areas for this use. The riparian forest located at Rancho would generally be protected by physically restraining dogs on leash. Riparian forest vegetation located in the 6-foot areas adjacent to the trail (LOD area) would receive long-term minor adverse impacts from dogs trampling vegetated areas; nutrient addition from dog waste would also occur. The effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail, and trails in riparian habitat constitute a small area in comparison to the entire site. Therefore, assuming compliance, the overall impacts on riparian vegetation from on-leash dog walking at Rancho would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking at Rancho is not common, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on riparian forest.

Cumulative Impacts. The negligible impacts on riparian vegetation from dogs at Rancho under alternative B were considered together with the effects of the projects mentioned above under alternative. The beneficial effects from the rehabilitation and improvement projects combined with the negligible impacts from alternative B would result in negligible cumulative impacts on riparian vegetation.

RANCHO CORRAL DE TIERRA ALTERNATIVE B CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed on designated trails in two areas open to dog walking near Montara and El Granada. Dog walking under voice and site control would be allowed in a VSCA located between Le Conte and Tamarind Street, in a previously (partially) disturbed open area across the street and east of the Farallone View School. The VSCA is not located within riparian forest vegetation. Therefore, impacts to riparian forest under alternative C are the same as alternative B: overall negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is also not one of the areas where permits to walk more than three dogs, with a limit of six, would be issued. Since commercial dog walking is not common at Rancho, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on riparian forest.

Cumulative Impacts. Under alternative C, the cumulative impacts on the riparian forest vegetation would be the same as those under alternative B: beneficial cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE C CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed in the Montara area on two existing trails that allow dog walking: Old San Pedro Mountain Road and the Farallon Cutoff. Dogs would be prohibited in other areas of the site, including the entire El Granada area. The riparian forest located at Rancho would generally be protected by physically restraining dogs on leash. Riparian forest vegetation located in the 6-foot areas adjacent to the trail (LOD area) would receive long-term minor adverse impacts from dogs trampling vegetated areas; nutrient addition from dog waste would also occur. The effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail, and trails in riparian habitat constitute a small area in comparison to the entire site. Therefore, assuming compliance, the overall impacts on riparian vegetation from on-leash dog walking at Rancho would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, no impact would occur as a result of commercial or permitted dog walking.

Cumulative Impacts. Under alternative D, the cumulative impacts on riparian forest would be the same as those under alternative B: beneficial cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE D CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Dog walking restrictions under alternative E would be the same as under alternative C and impacts on riparian forest vegetation would also be the same: overall, negligible impacts, assuming compliance.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is also not one of the areas where permits to walk more than three dogs, with a limit of six, would be issued. Since commercial dog walking activity is not common at Rancho, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on riparian forest.

Cumulative Impacts. Under alternative E, the cumulative impacts on riparian forest would be the same as those under alternative B: beneficial cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE E CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on designated trails in three areas. Trails in Montara include Old San Pedro Mountain Road, LeConte Trail, Corona Pedro Trail, and Farallon Cutoff from the park boundary in the west to the intersection with Corona Pedro Trail. On-leash trails in the El Granada area include the Denniston Ridge Trail between the San Carlos Trail and its intersection with the Clipper Ridge Trail, the Clipper Ridge Trail, the Memorial Loop, the Almeria Trail, and the San Carlos Trail. In the Moss Beach area, on-leash dog walking would be allowed on the Vincente Ridge and Ranchette Trails. Physically restraining dogs on leash would protect vegetation off trail. The preferred alternative would also establish a VSCA at Flat Top; however, the area is a former quarry site and does not contain riparian forest vegetation. Therefore, assuming compliance, the overall impact on riparian forest from on-leash dog walking at Rancho would be negligible.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is also not one of the areas where permits to walk more than three dogs, with a limit of six, would be issued. Since commercial dog walking activity is not common at Rancho, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative F would have negligible impacts on riparian forest.

Cumulative Impacts. Projects and actions in and near Rancho were considered for the cumulative impacts analysis (appendix K). Since the Rancho Corral de Tierra site has been transferred to NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking.

The GGNRA Maintenance Division conducts many ongoing functions throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites. Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involved constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica and Montara (County of San Mateo 2016d, 1). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible impacts on riparian forest from dogs at Rancho Corral de Tierra under the preferred alternative were considered together with the effects of the actions mentioned above. The beneficial effects from the park stewardship programs combined with the negligible impacts under the preferred alternative would result in beneficial cumulative impacts on riparian forest.

RANCHO CORRAL DE TIERRA PREFERRED ALTERNATIVE F CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Other Coniferous Communities

Stands of the non-native tree Monterey cypress are found within GGNRA, including at East Fort Miley, Lands End, and in several locations at Rancho Corral de Tierra. Most areas of Monterey cypress at Rancho Corral de Tierra were planted for wind breaks and as timber sources in the 1800s, as well as later for street trees and to provide shade. While these trees provide habitat for some nesting bird species, the creation of a densely shaded canopy and acidic soils disrupt the natural distribution of native species at Rancho Corral de Tierra (POST 2001, 54). In 1933, the City of San Francisco and the federal government's Civilian Works Administration planted thousands of Monterey cypress around Lands End; those cypress were thinned substantially during the initial stages of the Lands End Coastal Trail restoration. East Fort Miley is primarily Monterey cypress with some wetland/riparian vegetation around the fringes; the area is dominated by older stands of cypress, which were densely planted. East and West Fort Miley has low numbers of dog walkers, and low numbers of citations and incident reports related to dog activities at the site (table 10). A large portion of the site is developed with military fortifications and only a small portion of the site supports mature, coniferous vegetation (including primarily Monterey

cypress, which is not naturally occurring in San Francisco County) in areas that are open to dogs. The stands of mature Monterey cypress at East Fort Miley, Lands End, and Rancho Corral de Tierra are unlikely to be affected by dogs through trampling, digging, or dog waste due to their previously established nature at the site and/or the development that has previously occurred at Fort Miley and Lands End. Therefore, impacts from dogs on other coniferous communities (Monterey cypress) at Fort Miley, Lands End, and Rancho Corral de Tierra for all alternatives would be negligible and are not discussed further in this "Vegetation and Soils" section.

This chapter describes the potential environmental consequences of implementing any of the alternatives being considered. It is organized by resource topic and provides a standardized comparison among alternatives based on topics described in chapter 1 and further described in chapter 3. In accordance with NEPA, impacts are described in terms of context, intensity, and duration; cumulative impacts and mitigating measures for adverse impacts are also described. The analysis for each impact topic includes the methods used to assess the type and relative level of impact. In addition to determining the environmental consequences of implementing the preferred and other alternatives, NPS *Management Policies 2006* (Section 1.4) requires analysis of potential effects to determine whether or not proposed actions would impair a park's resources and values.

WILDLIFE

As stated in chapter 3, GGNRA supports a rich assemblage of wildlife in grasslands, coastal scrub, wetlands, and forests that compose the coastal ecosystem. Approximately 387 vertebrate species occur within the park boundaries, including 11 amphibians, 20 reptiles, 53 fish, 53 mammals, and 250 birds; terrestrial invertebrates are less well known. The documented species list includes species that are federally or state listed as threatened, endangered, or candidate species as well as species that are of local or management concern. Species that are federally listed and/or candidate species are discussed in the "Special-status Species" section of this chapter. This section addresses all other wildlife species found in the park, including those considered sensitive by agencies such as the Department of Fish and Wildlife, which maintains an informal list of plant and wildlife species of special concern. The NPS makes every reasonable effort to conduct its actions in a manner consistent with relevant state laws and regulations. In this section, impacts on wildlife in general are analyzed by habitat type to be consistent with the wildlife description included in chapter 3. Species are specifically analyzed where applicable and when affected by dog management as part of this final plan/EIS. The sites included in the analysis of this section are those where habitat quality and/or quantity may be affected by the various alternatives considered. Urbanized sites with little wildlife habitat or value that support species acclimated to human activity (raccoons, opossums, skunks, etc.) are not analyzed in this final plan/EIS. It is presumed that those acclimated species persist currently where dogs are present and will most likely continue to persist under alternatives A through E.

GGNRA is guided by a variety of legal directives, including federal and state laws, regulations, executive orders, NPS management policies, Director's Orders, other agency and departmental policies, decisions made through other NEPA planning processes, and legal agreements. Foremost among these directives is the NPS *Organic Act of 1916* and its interpretation in the NPS *Management Policies 2006* (NPS 2006a, 10). Following is an overview of the guiding policies and regulations, a description of the study area, a definition of duration, details of the assessment methodology, and a definition of the impact thresholds for wildlife.

GUIDING POLICIES AND REGULATIONS

Federal Laws and Regulations

Code of Federal Regulations. Disturbances to wildlife are addressed under 36 CFR 2.2(a) and 2.15(a)(4). Under 2.2(a), the following are prohibited:

- The taking of wildlife, except by authorized hunting and trapping activities conducted in accordance with paragraph (b) of this section.
- The feeding, touching, teasing, frightening or intentional disturbing of wildlife nesting, breeding or other activities.

Under 2.15(a)(4), the following is prohibited: allowing a pet to make noise that is unreasonable considering location, time of day or night, impact on park users, and other relevant factors, or that frightens wildlife by barking, howling, or making other noise. Section 2.15(a)(5) requires compliance with pet excrement disposal conditions established by the superintendent.

Migratory Bird Treaty Act of 1918. The *Migratory Bird Treaty Act* (16 USC 703–712), which was first enacted in 1918, implements domestically a series of treaties between the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former Union of Soviet Socialist Republics, which provide for international migratory bird protection and authorize the Secretary of the Interior to regulate the taking of migratory birds. The act makes it unlawful, except as allowed by regulations, "at any time, by any means, or in any manner, to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird, included in the terms of conventions" with certain other countries (16 USC 703). This includes direct and indirect acts, although harassment and habitat modification are not included unless they result in the direct loss of birds, nests, or eggs. All the bird species at GGNRA discussed in chapters 3 and 4 are protected under the *Migratory Bird Treaty Act*, with the exception of starlings, pigeons, crows, and game birds.

Marine Mammal Protection Act. The *Marine Mammal Protection Act* (16 USC 1361–1423), which was most recently reauthorized in 1994, establishes a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters. The term "take" is statutorily defined as, "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal." Harassment is defined under the 1994 amendments as any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption to behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering. All the marine mammal species at GGNRA discussed in chapters 3 and 4 are protected under the *Marine Mammal Protection Act* and marine mammals both strand and haul out on GGNRA beaches and other shoreline habitat. The *Marine Mammal Protection Act* defines a stranding as one or more of the following occurrences:

- Any dead marine mammal on the shore or in the water;
- A live marine mammal that is on the shore and unable to return to the water;
- A live marine mammal that is on the shore and in need of medical attention;
- A live marine mammal that is in the water but is unable to return to its natural habitat under its own power or without assistance (e.g., an animal entangled in fishing gear).

Magnuson-Stevens Fishery Management and Conservation Act. The *Magnuson-Stevens Fishery Conservation and Management Act* (PL 94-265), as amended by the *Sustainable Fisheries Act* of 1996

(PL 104-297), requires all federal agencies to consult with NOAA Fisheries (formerly the National Marine Fisheries Service) on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect essential fish habitat. Essential fish habitat is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (NOAA 2010b, 1) Waters include aquatic areas and their associated physical, chemical, and biological properties. Substrate includes sediment underlying the waters. Necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem.

Executive Order 13186—Responsibilities of Federal Agencies to Protect Migratory Birds. This executive order from January 2001 provides a comprehensive strategy for the conservation of migratory birds by the federal government, thereby fulfilling the government's duty to lead in the protection of migratory birds. The executive order provides a specific framework for the federal government's compliance with its treaty obligations to Canada, Mexico, Russia, and Japan and serves to enhance coordination and communication among federal agencies regarding their responsibilities under the four bilateral treaties on the conservation of migratory birds (Canada—1916, Mexico—1936, Japan—1972, Russia—1978). The executive order provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance, which is still in draft format. This executive order aids in incorporating national planning for bird conservation into agency programs and provides the formal presidential guidance necessary for agencies to incorporate migratory bird conservation more fully into their programs.

NPS Natural Resource Policies and Guidelines

The NPS has developed specific guidelines for the management of natural resources as described in NPS Director's Order 77, *Natural Resource Management Guidelines* (NPS 2002d). The guidelines provide for the management of native and non-native plant and animal species. The *Natural Resource Reference Manual #77,* offers comprehensive guidance for NPS employees responsible for managing, conserving, and protecting the natural resources found in National park system units. This manual replaces the NPS-77 *The Natural Resource Management Guideline*, issued in 1991 under previous guideline series. To date, 16 of the 42 sections of NPS-77 have been revised.

The NPS *Management Policies 2006* state that the NPS "will maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems. The term "plants and animals" refers to all five of the commonly recognized kingdoms of living things and includes such groups as flowering plants, ferns, mosses, lichens, algae, fungi, bacteria, mammals, birds, reptiles, amphibians, fishes, insects, worms, crustaceans, and microscopic plants or animals." The NPS will achieve this by

- preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations and the communities and ecosystems in which they occur;
- restoring native plant and animal populations in parks when they have been extirpated by past human caused actions; and
- minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them (NPS 2006a, Section 4.1).

Additionally, the *Organic Act of 1916* (54 USC 100101(a), 100301) directs national parks to conserve wildlife unimpaired for future generations and is interpreted to mean that native animal life is to be protected and perpetuated as part of a park unit's natural ecosystem. Parks rely on natural processes to control populations of native species to the greatest extent possible; otherwise, they are protected from harvest, harassment, or harm by human activities.

State Laws and Regulations

California Fish and Game Code. Protection of birds: The California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird (Section 3503). Specifically, it is unlawful to take, possess, or destroy any raptors (i.e., eagles, hawks, owls, and falcons), including their nests or eggs (Section 3503.5). The code adopts the provisions of the *Migratory Bird Treaty Act* and states that it is unlawful to take or possess any designated migratory nongame bird or any part of such migratory nongame bird (Section 3513). The state code offers no statutory or regulatory mechanism for obtaining an incidental take permit for the loss of nongame migratory birds. Typical violations include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of the code could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction.

STUDY AREA

The geographic study area for analysis of wildlife impacts includes the GGNRA sites under consideration for this final plan/EIS where wildlife could be impacted by proposed dog management actions. Not all wildlife species that use particular vegetation communities in GGNRA will be affected by this project; therefore, this section only analyzes impacts on the wildlife that could be affected by dog management activities.

DURATION OF IMPACT

Duration describes the length of time an effect would occur, either short term or long term. Long-term impacts to wildlife are described as those persisting for the life of the plan/EIS (the next 20 years). After the implementation of the plan, a 1- to 3-month period of public education would occur to implement the proposed action, followed by a 1- to 3-month period testing the monitoring-based management program. At the beginning of the education and enforcement period, short-term impacts on all natural resources would occur, regardless of the alternative chosen. During this period, impacts on wildlife would be similar to the current conditions and would be short-term. Following the education period, monitoring for noncompliance and resource impact would begin and it is expected that compliance with the dog walking regulations and associated adverse impacts would improve gradually and the impacts on wildlife would then become long term, as described below for each alternative.

ASSESSMENT METHODOLOGY

This analysis of impacts on wildlife considered the changes and disturbance to wildlife habitat, wildlife species, or the natural processes sustaining them that would occur as a result of the implementation of alternatives A through E.

Overall, impacts on wildlife were analyzed qualitatively. The information in this analysis was obtained through best professional judgment of park staff, experts in the field, and supporting literature (as cited in the text). Data on frequency of disturbance of wildlife in a particular park site, if available, has been incorporated with relevant scientific literature to predict the impact of dog management activities on wildlife. Where data on the frequency of disturbance is not available, information from park staff and visitors on the relative intensity of use by visitors and the relative number of dogs both on and off leash has been used to predict impacts.

At GGNRA, the management of wildlife and wildlife habitat is primarily focused on research, monitoring, and actively protecting and restoring natural processes that sustain native habitat and the wildlife therein. Wildlife species that could be affected by this project primarily include bird species,

mammalian species (small and large terrestrial mammals as well as marine mammals), reptiles, and amphibians and are discussed as applicable by site and alternative. With the exception of listed fish species (which are discussed in the "Special-status Species" section), fish and invertebrates are not included in this section because these groups are unlikely to be affected by dogs. Inventorying of wildlife species is currently ongoing at the sites not yet acquired by the park, such as Cattle Hill. Therefore, wildlife species with the potential to occur at these sites are identified when applicable.

WILDLIFE IMPACT THRESHOLDS

Wildlife impacts were determined by examining the potential effects of dog walking activities on native wildlife species, their habitats (including quality, quantity, and distribution of habitats), or the natural processes sustaining them, as well as responses to disturbance by dogs. The intensity of each adverse impact is judged as having a minor, moderate, or major effect. Negligible impacts are neither adverse nor beneficial, nor long-term or short-term. A beneficial impact would be a positive change in the condition or appearance of the resource. "No impact" on wildlife species may also be applicable for some alternatives and sites if dogs are prohibited. The following impact thresholds were established to describe the relative changes in wildlife under the various alternatives being considered:

Beneficial A beneficial impact is a beneficial change from the current condition and is a relative indicator of progress compared to the no-action alternative. In general, a beneficial impact would include an increase of the native wildlife species, their habitats (including quality, quantity, and distribution of habitats), or the natural processes sustaining them.

Negligible There would be no observable or measurable impacts on native species, their habitats, or the natural processes sustaining them. Impacts would be well within the natural range of variability.

Adverse **Minor**. Impacts on native wildlife species, their habitats, or the natural processes sustaining them would be detectable, but would not be outside the natural range of variability. Occasional responses to disturbance from dogs by some individuals could be expected, with some negative impacts on feeding, migration, overwintering, reproduction, resting, or other factors that may affect wildlife at the park. Sufficient habitat in the park would remain functional to support wildlife at GGNRA.

Moderate. Impacts on native species, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Frequent responses to disturbance from dogs by some individuals could be expected, with some negative impacts on feeding, migration, overwintering, reproduction, resting, or other factors that may affect wildlife at the park. However, sufficient habitat in the park would remain functional to support wildlife at GGNRA.

> **Major**. Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, would be outside the natural range of variability, and would be permanent. Frequent and repeated responses to disturbance from dogs by some individuals could be expected, with negative impacts on feeding, migration, overwintering, reproduction, resting, or other factors that may affect wildlife at the park. Sufficient habitat in the park would not remain functional to support wildlife at GGNRA.

For the action alternatives, on-leash dog walking impacts were based on an allowed 6-foot dog leash. Since dog walkers may walk along the edge of fire roads or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in a LOD area for wildlife that would extend 6 feet out from the edges of the fire road or trail. The impacts analysis that follows describes impacts on wildlife by vegetation type for each alternative and applicable site.

CUMULATIVE WILDLIFE IMPACTS COMMON TO ALL ALTERNATIVES

Influences on vegetation communities in GGNRA could result in alterations to plant communities that provide habitat for wildlife in the park, including amphibians and reptiles, small and large mammals (terrestrial and aquatic), birds, and invertebrates. Alterations to vegetation habitat that result in effects on wildlife at GGNRA include those resulting from fire suppression, urban development and loss of habitat continuity, and the establishment of non-native plant species that exclude wildlife or modify wildlife distribution.

Suppression of wildland fires has allowed the unnatural buildup of both dead and live fuels. The buildup of fuels generally increases the risk of wildfire, which when it occurs can cause wildlife species that are mobile to leave their home area, or can result in direct mortality of wildlife unable to flee the fire. In addition, wildfire can destroy wildlife habitat for some time after a fire. Development of land in the region, extirpation of some species (grizzly bear, tule elk), introduction of exotic species competing for limited habitats, and fragmentation of available habitat have also contributed to changes in occurrence and population sizes of some species. For example, California coastal scrub habitats have declined due to agricultural, industrial, and residential development, directly affecting mammal and bird species that use this habitat. California grassland habitats, which support rodents as well as raptors and other predators, have been declining due to agricultural use or urban development. Regional loss of forests through logging, catastrophic fire events, and urbanization has led to fragmented, isolated forest stands. Recreational trails and their use also fragment habitat and impact habitat quality.

The US North American Bird Conservation Initiative is a forum of government agencies, private organizations, and bird initiatives that work with federal, state, and nongovernmental organizations to meet common bird conservation objectives. The US North American Bird Conservation Initiative fosters collaboration on key issues of concern, including bird monitoring, conservation design, private lands, international objectives, and state and federal agency support for integrated bird conservation. Each year, the US North American Bird Conservation Initiative releases a “state of the birds” report, which provides important scientific data to a broad audience with a call to action to improve the conservation status of birds and the environment. The *State of the Birds 2011 Report* (NABCI, U.S. Committee 2011, 23) identified that:

> Major threats to coastal birds include habitat loss and degradation, human disturbance, and predators. Public recreation, development interests, and wildlife compete for beaches. Public ownership of beaches varies among states. In most states, all land below the mean high tide line belongs to the state, and citizens have the right to unrestricted access.

> Primary threats to birds on beaches include human-caused disturbance, increased predators, sea-level rise, and habitat loss. Many states allow off-road vehicles (ORVs) or unrestricted public access with pets such as dogs and cats. ORVs can be highly disturbing to nesting or feeding shorebirds.

Past, current, and reasonably foreseeable future actions positively affecting wildlife in the park are activities that restore or enhance habitat. These projects include habitat protections and closures, education and outreach, and wetland restoration as well as non-native plant removal and reestablishment of native plant communities, with subsequent direct benefits to wildlife species. Potentially adverse impacts could occur through development both within and adjacent to park boundaries, including the various transportation plans and trails plans. These efforts would involve ground disturbance that could add to or exacerbate existing habitat fragmentation along road and trail corridors. However, efforts to identify mitigation measures such as pre-project coordination with nesting seasons, time of year restrictions, and development and implementation of post-project site plans, would reduce the potential for impacts. Current transportation, trail, and development planning efforts both within and beyond park boundaries would affect vegetation and wildlife, but mitigation for these projects would reduce the potential for impacts.

Completed, current, and future project activities that will have a beneficial impact on wildlife and wildlife habitat in the GGNRA sites are listed below and discussed under each alternative as applicable:

- GGNRA GMP, which establishes guidelines for resource protection in the park (NPS 2014).
- The *Inventory and Monitoring Program* at GGNRA for natural resources.
- Park improvements of signs and fencing, and initiation of shorebird docent program for the SPPA at Ocean Beach and the WPA at Crissy Field.
- GGNRA *Fire Management Plan* (NPS 2005b), which provides guidance for the protection of natural resources through the use of prescribed burns, fire protection measures, and the reduction of fuel hazards.
- GGNRA Habitat Restoration Programs, parkwide invasive species removal and/or native plant restoration projects to restore and enhance natural terrestrial plant communities in GGNRA.
- Park stewardship programs that have worked with GGNRA since 2003 to control invasive plant species and restore natural plant species throughout the park, resulting in the restoration or enhancement of over 1,000 acres of trailside habitat in sites including Marin Headlands Trails and Lands End.
- The *Mori Point Restoration and Trail Plan*, which restored the ecological integrity of existing habitats and restored native plant communities.
- Restoration of native vegetation as part of the *Lower Easkoot Creek Restoration at Stinson Beach* (NPS n.d.d, 1).
- The *Wetland and Creek Restoration at Big Lagoon, Muir Beach, Marin County* project, restored riparian habitat; installed fencing to protect wetland plant communities; created habitat for threatened and endangered species like coho salmon, steelhead trout, and California red-legged frogs.
- Fencing installed at Rodeo Beach as part of the *Marin Headlands Trails/Fort Baker Improvement and Transportation Management Plan/EIS*, which protects sensitive coastal dune and wetland communities.

In addition to the GGNRA-sponsored projects discussed above, the SNRAMP will also be included in the cumulative impacts analysis, as described in more detail in the "Vegetation and Soils" section of this chapter. Dog management alternatives that prohibit dogs from wildlife habitat, restrict dog walking to on-leash walking, or establish VSCAs in fenced areas are generally most protective of wildlife and wildlife habitat; fencing, however, can preclude movement by larger wildlife species. In general, dog management alternatives that prohibit dogs or restrict dog walking to on-leash walking or in a designated VSCA combined with the benefits to wildlife and wildlife habitat from the restoration and enhancement projects listed above would have beneficial cumulative impacts on wildlife and wildlife habitat at GGNRA. Sites and proposed actions in alternatives that may have different cumulative impacts on wildlife and/or wildlife habitat are discussed below.

IMPACTS TO WILDLIFE IN COASTAL COMMUNITIES BY SITE AND ALTERNATIVE

This section discusses impacts on wildlife species that use the coastal communities at GGNRA, including dunes, beaches, and adjacent open water. Migrant and overwintering shorebirds use beach and dune habitats along the coastline in GGNRA primarily as stopover and overwintering areas. The highest density of shorebirds on monitored GGNRA beaches generally occurs during the overwintering months of November and December, as well as in April and September during shorebird northbound and southbound migration, respectively (Beach Watch 2009). Collected data for beaches have indicated that willet, marbled godwit, sanderling, and whimbrel are the most common species of shorebirds using beaches in GGNRA and are found to some extent year-round (Beach Watch 2009). The sanderling, long-billed curlew, and marbled godwit are considered watch list species in need of conservation (American Bird Conservancy and National Audubon Society 2007, 2). The recently delisted California brown pelican is relatively abundant in the coastal community habitats at GGNRA, and the NPS has previously provided important roost areas for this species, which may be affected by dogs. The NPS manages protection of the federally threatened western snowy plover from disturbance by off-leash dogs (discussed in detail in the "Special-status Species" section) through the designation of seasonally protected areas in GGNRA (NPS 2008b), which also protects and benefits other shorebirds that use these areas.

The following sites contain coastal beach and/or coastal dune communities and are documented areas where shorebirds, gulls, and terns, as well as marine mammals, may be affected by dog management alternatives, and impacts are discussed in more detail below. Many of the coastal sites in GGNRA have rocky intertidal areas and cliffs, including Muir Beach, Rodeo Beach, Fort Baker, Fort Mason, Baker Beach and Bluffs to Golden Gate, Lands End, Fort Funston, and Mori Point, but either these rocky intertidal areas and cliffs are not the dominant habitat type at the site or are generally not accessible to visitors, therefore they are not discussed further in this final plan/EIS.

MARIN COUNTY SITES

Stinson Beach

Alternative A: No Action. At Stinson Beach, dogs and dog owners are restricted to having dogs on leash in the parking lots and picnic areas since dogs are not allowed on the beach because it is a swimming beach. Currently, there is low compliance with the no-dog walking restriction on the park's portion of Stinson Beach; from 2008 through 2011, there were 76 incidents for walking a dog in an area closed to pets (table 7a). In addition, there are four recorded incidents of dogs disturbing wildlife at this site (appendix G). Dogs are not allowed near dune communities or on the beach, but noncompliance occurs at a small portion of this site, particularly at the north end of the beach and dunes where dog walkers access the adjacent county beach and dogs disturb shorebirds on the beach.

Under alternative A, even though dogs would be prohibited on Stinson Beach, they could occasionally affect wildlife species that use coastal dunes and beaches through continued dog presence at the site; unleashed dogs could bark at or chase roosting or feeding birds at this site, resulting in disturbance. This type of disturbance could result in loss of preferred habitat as well as energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. Additionally, marine mammals that haul out or strand at Stinson Beach could occasionally be affected through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water. Therefore, alternative A would result in negligible to long-term minor adverse impacts on wildlife at Stinson Beach.

Under alternative A, no permit system exists for dog walking. At Stinson Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact wildlife at Stinson Beach. The *Lower Easkoot Creek Restoration* at Stinson Beach has restored native vegetation (NPS n.d.d, 1). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project*, located near Stinson Beach, in partnership with Marin County Open Space District and the U.S. Army Corps of Engineers (GFNMS Working Group 2008), which will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Stinson Beach is uncommon and all dog walking at the site is on leash. However, the interim compendium amendment would have a slight beneficial effect on coastal communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing trampling and dune erosion.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS

2009b). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The negligible to long-term minor adverse impacts on wildlife from dogs at Stinson Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

STINSON BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Dogs would not be allowed near dune communities or on the beach, but noncompliance occurs at this site from the adjacent county beach, where dogs disturb shorebirds on the beach; it is possible that dogs would directly affect wildlife that use coastal dunes and beaches; dog presence and barking at could also indirectly affect wildlife, such as shorebirds	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would have the same dog walking restrictions as alternative A: dogs would be allowed on leash in the parking lots and picnic areas. Dogs are not allowed on the beach itself, because it is a designated swimming beach. No impact on wildlife at Stinson Beach would occur if visitors are compliant with the current restrictions. Since dogs are restricted from the beach and dune communities, coastal wildlife and marine mammals would not be affected by dog activities.

Since dogs are restricted from the beach and dune communities, no impact to the coastal wildlife and marine mammals would occur; therefore commercial dog walkers would have no impact to the coastal wildlife and marine mammals.

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact wildlife at Stinson Beach. The *Lower Easkoot Creek Restoration* at Stinson Beach has restored native vegetation (NPS n.d.d, 1). The Gulf of the Farallones National Marine Sanctuary has proposed the

Bolinas Lagoon Ecosystem Restoration Project, located near Stinson Beach, in partnership with Marin County Open Space District and the U.S. Army Corps of Engineers (GFNMS Working Group 2008), which will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The lack of impacts on wildlife from dogs at Stinson Beach under alternative B was considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the lack of impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

STINSON BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Dogs would be prohibited on trails and beach	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts on wildlife would be the same, assuming compliance: no impact.

Since dogs are restricted from the beach and dune communities, no impact to the coastal wildlife and marine mammals would occur; therefore commercial dog walkers would have no impact to the coastal wildlife and marine mammals.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site on wildlife would be the same those under alternative B: negligible cumulative impacts.

STINSON BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Dogs would be prohibited on trails and beach	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at Stinson Beach. Therefore, assuming compliance, no impact on wildlife from dogs would occur at this site.

Since dogs would not be allowed at the site, no impact to the coastal wildlife and marine mammals would occur from commercial dog walkers.

Cumulative Impacts. There would be no impact on wildlife at this site under alternative D. This lack of impact combined with the beneficial effects from the restoration projects provided by the park stewardship programs and the negligible impacts from the past oil spill and from any development or construction actions would result in negligible cumulative impacts on wildlife.

STINSON BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts on wildlife would be the same, assuming compliance: no impact.

Since dogs are restricted from the beach and dune communities, no impact to the coastal wildlife and marine mammals would occur; therefore commercial dog walkers would have no impact to the coastal wildlife and marine mammals.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site on wildlife would be the same those under alternative B: negligible.

STINSON BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Dogs would be prohibited on trails and beach	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking in the parking lots and northern and central picnic areas of Stinson Beach and on the path to Upton Beach from the north parking lot. Dogs would not be allowed on the beach itself because it is a designated swimming beach, and dogs would be restricted from the southern picnic area to maintain a dog-free area for visitors. The on-leash path or corridor to be built from the north parking lot of Stinson Beach would provide legal access to Upton Beach, the Marin County-managed beach where dog walking is allowed. This access trail would include fencing or a barrier to separate this trail from the GGNRA beach where dogs are

prohibited. This proposed path is located within coastal dune communities and dune erosion is currently occurring at the northern end of the parking lot, resulting in flooding of adjacent properties and the parking lot. Therefore, a long-term minor adverse impact would occur to the coastal community as a result of formalized access to Upton Beach by visitors of all kinds (both humans and dogs). However, the park would determine the most appropriate location for the access route to reduce the potential for added dune erosion at this location and would consider restoration of the dunes in this area in the future. At Stinson Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on the coastal foredune wildlife community.

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact wildlife at Stinson Beach. The *Lower Easkoot Creek Restoration Project* at Stinson Beach has restored native vegetation (NPS n.d.d, 1). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project*, located near Stinson Beach, in partnership with Marin County Open Space District and the U.S. Army Corps of Engineers (GFNMS Working Group 2008), which will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The lack of impacts on wildlife from dogs at Stinson Beach under the preferred alternative was considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the lack of impacts on wildlife from the preferred alternative would result in negligible cumulative impacts on wildlife.

STINSON BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Dogs would be prohibited on trails and beach	Beneficial, assuming compliance	Negligible cumulative impacts

Muir Beach

Alternative A: No Action. At Muir Beach, dune communities, including a dune restoration area, are located adjacent to the beach, which is open to dogs under voice control. This site has moderate visitor use and a total of 42 dog-related violations were reported from 2008 through 2016 (tables 15a and 15b). The most common violation was for having a dog off-leash (19 violations over 9 years) (tables 15a and 15b)The lagoon is currently closed to people and dogs for overall resource protection. The dune communities at Muir Beach are not well protected. Ineffective post-and-cable fencing at Muir Beach discourages visitors from entering the dune restoration area; other dune areas are unfenced and would not physically exclude dogs.

Although the site has documented low shorebird abundance and diversity compared to other GGNRA coastal beaches, dog presence at the site as well as dogs barking at, chasing after, and being in proximity to roosting or feeding birds would continue to result in disturbance to shorebirds and waterbirds. This type of disturbance by dogs could result in loss of preferred habitat as well as energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. The presence of leashed and mostly unleashed dogs also results in flushing and displacement of shorebirds in response to presence of a perceived predator. The lagoon at Muir Beach supports river otters, shorebirds, wading birds, and waterbirds in addition to the limited numbers of shorebirds along the beach/ocean shoreline. A fence surrounds the lagoon but does not effectively keep dogs out of the area. The lagoon at Muir Beach was recently restored and may attract more shorebirds and waterbirds and increase visitor use of the site in the future, and the area could be subjected to repeated disturbance by unleashed dogs, including in closed or fenced areas. Additionally, marine mammals that haul out or strand at Muir Beach could occasionally be affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water. Alternative A would result in continued long-term minor to moderate adverse impacts on shorebirds, gulls, terns, and marine mammals using beach or dune habitat at Muir Beach because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Muir Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. Specific projects both in GGNRA and beyond park boundaries will also provide indirect benefits to shorebirds and include the *Muir Beach Wetland and Creek Restoration Project*, designed to bring back natural function to the water bodies and coastal dunes (NPS 2007b).

Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and

contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain as well as expanding riparian vegetation at the Banducci site (NPS 2010b). The *Dias Ridge Restoration and Trail Improvement Project* realigned trail segments and restored degraded areas on Dias Ridge above Muir Beach (NPS 2016). Additional vegetation benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way. The *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project has restored and enhanced ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2007b; NPS 2009j). The park stewardship programs initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants, such as pampas grass, to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010a).

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Muir Beach is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal communities at Muir Beach by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing trampling, digging, and dog waste.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term minor to moderate adverse impacts on wildlife from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs and the interim

permitting program should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to range from negligible to long term, minor, and adverse.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Shorebirds on beach would occasionally to frequently be subjected to impacts by on-leash and voice control dogs through barking at, chasing after, and being in proximity to roosting or feeding birds; although shorebird numbers are low, visitor use is high at this site; marine mammals would occasionally be subjected to impacts from dogs on the beach	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking in the parking area, the Muir Beach Trail including the pedestrian bridge, the portion of Kaashi Way from the bridge to the beach, and the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and by lunging/barking at roosting, resting, and feeding birds. This could cause birds to flee or relocate, using energy reserves unnecessarily, and could result in the loss of preferred habitat. Muir Beach also has a recently restored lagoon—currently closed to people and dogs—that supports shorebirds, wading birds, and waterbirds in addition to the limited numbers of shorebirds along the beach/ocean shoreline. The combination of on-leash dog walking requirements and the fence that surrounds the lagoon would effectively keep dogs out of this area. Therefore, assuming compliance, overall impacts as a result of alternative B would be long term and would range from negligible to minor adverse impacts on wildlife because shorebirds and waterbirds may not be affected or may occasionally be affected by on-leash dogs. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers at this site. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. Specific projects both in

GGNRA and beyond park boundaries will also provide indirect benefits to shorebirds and include the *Muir Beach Wetland and Creek Restoration Project*, designed to bring back natural function to the water bodies and coastal dunes (NPS 2007b).

Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance.

Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain as well as expanding riparian vegetation at the Banducci site (NPS 2010b). The *Dias Ridge Restoration and Trail Improvement Project* realigned trail segments and restored degraded areas on Dias Ridge above Muir Beach (NPS 2016). Additional vegetation benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way. The *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project has restored and enhanced ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2007b; NPS 2009j). The park stewardship programs initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants, such as pampas grass, to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010a).

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The negligible to long-term minor adverse impacts on wildlife from dogs at Muir Beach under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from

the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same: negligible to long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. No permits would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk a maximum of three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park would be the same those under alternative B: negligible cumulative impacts.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would only be allowed on Muir Beach Trail and in the parking lot, and would not be allowed on the beach or the pedestrian bridge/path to the beach. Alternative D would provide the most protection to shorebirds, gulls, and terns as well as any stranded marine mammals at Muir Beach by prohibiting dogs in the beach area. The lagoon is currently closed to people and dogs for resource protection. Assuming compliance, alternative D would result in no impact on wildlife, including birds and marine mammals, using beach/dune habitat at Muir Beach.

The coastal community wildlife would not be affected by commercial dog walking as dogs would not be allowed on the beach.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Muir Beach under alternative D was considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Dogs would be prohibited on the beach	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. In the vicinity of Muir Beach, the parking area, the Muir Beach Trail, the pedestrian bridge, and the portion of Kaashi Way from the bridge to the beach would be open to on-leash dog walking. The portion of Muir Beach south of Kaashi Way would be a designated VSCA open to dogs under voice and sight control. Dogs would be prohibited on the remainder of the beach north of Kaashi Way. The VSCA designated as part of this alternative is located immediately adjacent to the fenced dune restoration area. The lagoon is currently closed to people and dogs for resource protection. Shorebirds, gulls, and terns roosting or feeding in the VSCA would likely relocate to other areas where dogs are not present when unleashed dogs are in the VSCA, but loss of preferred habitat would have an impact on wildlife. Marine mammals that become stranded on the beach in the VSCA proposed in alternative E could be subjected to disturbance from unleashed dogs, which could bite, bark at, or clamber over stranded or hauled-out animals. Therefore, alternative E would result in long-term moderate adverse impacts on wildlife in the VSCA.

The long-term moderate adverse impacts on wildlife in the VSCA would occur on approximately a quarter of Muir Beach. Also, the VSCA is located away from Redwood Creek and the lagoon, where the greatest numbers of birds have been observed at this site, especially following the lagoon restoration that occurred in 2009. Therefore, assuming compliance, the overall impact on wildlife at Muir Beach under alternative E would be long term, minor, and adverse. Physically restraining dogs would protect shorebirds and marine mammals in on-leash areas, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect shorebirds and marine mammals in on-leash areas, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; VSCA only encompasses a portion of beach habitat at the site and is located away from Redwood Creek and the lagoon (high bird use areas)	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the parking area, the Muir Beach Trail including the pedestrian bridge, the beach, and Kaashi Way from the beach to Pacific Way. Fencing would be installed along the dunes, the lagoon, and Kaashi Way as needed to protect resources. The tidal lagoon and Redwood Creek, which are currently closed to dogs, would remain so. The preferred alternative would provide protection to shorebirds, gulls, and terns, as well as any stranded marine mammals at Muir Beach, by requiring a leash on dogs on the beach. The lagoon would remain closed to dogs and people. However, on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and by lunging/barking at roosting, resting, and feeding birds. This could cause birds to flee or relocate, using energy reserves unnecessarily, and could result in the loss of preferred habitat. Muir Beach also has a recently restored lagoon—closed to people and dogs—that supports river otters, shorebirds, wading birds, and waterbirds. In addition there are small numbers of shorebirds along the beach/ocean shoreline. The combination of on-leash dog walking requirements and the fence that surrounds the lagoon would effectively keep dogs out of this area. Therefore, assuming compliance, overall impacts as a result of alternative B would be long term and would range from negligible to minor adverse impacts on wildlife because shorebirds and waterbirds may occasionally be affected by on-leash dogs. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. Specific projects both in GGNRA and beyond park boundaries also provide indirect benefits to shorebirds and include the *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project, designed to bring back natural function to the water bodies and coastal dunes at Muir Beach (NPS 2007b).

Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance.

Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain, as well as expanding riparian vegetation at the Banducci site (NPS 2010b, 1). The *Dias Ridge Restoration and Trail Improvement Project* realigned trail segments and restored degraded areas on Dias Ridge above Muir Beach (NPS 2009i, 1). Additional vegetation benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way. The *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project restored and enhanced ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009j, 1). The park stewardship programs initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants, such as pampas grass, to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010a, 1). Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and

by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The negligible to long-term minor adverse impacts on wildlife from dogs at Muir Beach under the preferred alternative was considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the negligible to long-term minor adverse impacts on wildlife from the preferred alternative would result in negligible cumulative impacts on wildlife.

MUIR BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term, minor adverse impact, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on the beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Rodeo Beach/South Rodeo Beach

Alternative A: No Action. Under current conditions, dogs are allowed under voice control on Rodeo Beach and South Rodeo Beach; on-leash dog walking is allowed on the footbridge and access trail to the beach. Currently, there is low to moderate use of the site for on-leash and voice control dog walking at the beach and other areas. The lagoon and lake are currently closed to people and dogs for overall resource protection. A total of 56 dog-related incidents were reported from 2008 through 2016 (tables 16a and 16b) with 18 off-leash violations and 8 incidents involving pets within closed areas. Park staff has estimated that they observe dogs in the lagoon at least once a week, and on a daily basis during good weather. Although the site has documented low shorebird abundance and diversity compared to other GGNRA coastal beaches, dog presence at the site, including unleashed dogs, which could bark at or chase roosting or feeding birds, could result in disturbance. This type of disturbance could result in abandonment of the area, relocation, and/or loss of preferred habitat. This would result in energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. Rodeo Beach/South Rodeo Beach has a lagoon that supports high bird use by shorebirds, wading birds, and waterbirds in addition to the limited numbers of shorebirds that use the beach/ocean shoreline. Wading birds, as well as pelicans and cormorants, use both the beach and the lagoon shoreline. Several hundred brown pelicans roost on Rodeo Beach on rare occasions and the nearby Bird Island also supports numerous bird species. Visitor use is moderate to high at this site, and even though the beach at Rodeo Beach/South Rodeo Beach is large and dogs are more spread out, birds along the shoreline of Rodeo Beach/South Rodeo Beach, the lake, and the lagoon are regularly disturbed by off-leash dogs and people, and the proposed fence along the western shoreline of the lagoon will deter but not physically exclude dogs from accessing the lagoon from the beach. Additionally, marine mammals that haul out or strand at Rodeo Beach/South Rodeo Beach would be affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-

out mammals back into the water. Alternative A would result in continued long-term moderate adverse impacts on shorebirds, gulls, terns, and marine mammals because continued frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Rodeo Beach/South Rodeo Beach, commercial dog walking is uncommon although it has recently begun to increase. Commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Rodeo Beach/South Rodeo Beach is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing trampling, digging, and dog waste.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had minor to moderate adverse effects on wildlife such as marine mammals and birds at Rodeo Beach/South Rodeo Beach. The impacts on wildlife from this spill at Rodeo Beach/South Rodeo Beach lasted 8 to 9 months. However, by the time this dog management plan/EIS is implemented the adverse impacts on wildlife at Rodeo Beach/South Rodeo Beach should be reduced to a negligible level.

The long-term moderate adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be

negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Shorebirds on beach and wading birds such as pelicans would frequently be subjected to impacts by on-leash and voice control dogs through barking at, chasing after, and being in proximity to roosting or feeding birds; although shorebird numbers are low, visitor use is high and coastal habitat is large at this site; marine mammals would occasionally be subjected to impacts from dogs on the beach	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B proposes on-leash dog walking on Rodeo Beach/ South Rodeo Beach, the footbridge, and access trail to the beach. The lagoon and lake are currently closed to people and dogs for resource protection. On-leash dog walking would not allow dogs to roam freely along the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. This could cause birds to abandon the area or relocate, using energy reserves unnecessarily, and could result in the loss of preferred habitat. Rodeo Beach/South Rodeo Beach has a lagoon and a lake that support high bird use by shorebirds, wading birds, and waterbirds in addition to the limited numbers of shorebirds that use the beach/ocean shoreline. A fence is proposed along the western shoreline of the lagoon to discourage dogs from accessing the lagoon from the beach. The combination of on-leash dog walking requirements and the fence surrounding the lagoon would effectively keep dogs out of the closed area. Therefore, assuming compliance, overall impacts as a result of alternative B would be long term and would range from negligible to minor adverse impacts on wildlife, because shorebirds and waterbirds may not be affected or may occasionally be affected by on-leash dogs. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Rodeo Beach or South Rodeo Beach, but has recently begun to increase, it is likely that this alternative may increase the number of commercial dog walkers at this site in the future. Therefore, commercial dog walking under alternative B would have a negligible to long-term minor adverse impact on wildlife.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had minor to moderate adverse effects on wildlife such as marine mammals and birds at Rodeo Beach/South Rodeo Beach. The impacts on wildlife from this spill at Rodeo Beach/South Rodeo Beach lasted 8 to 9 months. However, by the time this dog management plan/EIS is implemented the adverse impacts on wildlife at Rodeo Beach/South Rodeo Beach should be reduced to a negligible level.

The negligible to long-term minor adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs along with the negligible impacts from the past oil spill and from any development or construction actions combined with the negligible to long-term minor adverse impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site, including the presence of dogs	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would provide a VSCA on Rodeo Beach that would extend the full length of the beach and include the entire width of the beach from the ocean to the bluffs and to the proposed post-and-cable fence to be installed to protect the shoreline habitat at the western end of Rodeo Lagoon. The VSCA would include portions of the sparsely vegetated foredunes that extend from the crest of the beach to the western edge of the lagoon. On-leash dog walking would be allowed on the footbridge to the beach, and South Rodeo Beach would be closed to dogs. Rodeo Lagoon and lake are currently closed to people and dogs for overall resource protection. The installation of the post-and-cable fence along the west end of Rodeo Lagoon would discourage visitors from accessing the lagoon, but would not physically exclude dogs from this area. A fence more impervious to dogs in this area is not feasible because winter storm waves wash over the entire beach, and wind-driven litter and debris would be trapped in the fence. Shorebirds, gulls, and terns roosting or feeding in the VSCA would be disrupted by dogs under voice and sight control on North Rodeo Beach. Marine mammals that become stranded or haul out on the beach in the VSCA could be subjected to disturbance from the presence of unleashed dogs, which could bite, bark at, or clamber over the animals. Therefore, alternative C would result in long-term minor to moderate adverse impacts on marine mammals and shorebirds in the VSCA; impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Birds roosting or feeding in the VSCA may be forced to abandon the area or relocate, but at this site, there is no other habitat nearby, which may cause birds to flush and settle repeatedly, causing energy reserves to be used up. The VSCA encompasses a large portion of beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; there is no on-leash area (non-VSCA) designated for Rodeo Beach as part of alternative C. Therefore, overall impacts on wildlife under alternative C would be long term and would range from minor to moderate and adverse, since impacts would depend on the seasonal presence marine mammals and birds as well as the level of activity at the site.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Rodeo Beach, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, but has recently begun to increase, and it is likely that this alternative may increase the number of commercial dog walkers at this site in the future. Therefore, commercial dog walking under the alternative C would have a negligible to long-term minor adverse impact on wildlife.

Cumulative Impacts. The long-term minor to moderate adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative C were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the long-term minor to moderate adverse impacts on wildlife from alternative C would result in negligible to long-term minor adverse cumulative impacts on wildlife.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	The VSCA encompasses a large portion of beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; impacts would depend on the seasonal presence of the birds and the level of activity at the site, including the presence of dogs	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed only on the main beach, north of the footbridge and on the footbridge to the beach. Rodeo lagoon and lake are currently closed to people and dogs for resource protection. Alternative D at Rodeo Beach/South Rodeo Beach would provide shorebirds, gulls, and terns with foraging and roosting habitat that is protected from dogs; physically restraining dogs on leash would protect shorebirds and marine mammals on the beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach. Shorebirds, gulls, and terns roosting or feeding in the on-leash area may relocate to an area of the beach where dogs are prohibited when dogs are present and use the on-leash area only when dogs are absent; this relocation would affect energy reserves in birds. Additionally, marine mammals that become stranded or haul out on the beach in the on-leash area could be subjected to disturbance from dogs. Therefore, assuming compliance, alternative D impacts on shorebirds, gulls, terns, and marine mammals would be negligible to long term, minor, and adverse depending on the seasonal presence of the birds and level of activity at the site. Although birds at the site would have similar habitat in close proximity that is prohibited to dogs, displacement of birds to another location would still have an impact on wildlife. Up to a minor adverse impact is expected because the primary area used by birds would be adjacent to the no-dog area, and dogs would be on leash in the other area, where they could disturb birds along the unfenced portion of the lagoon.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative D were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the negligible to long-term minor adverse impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site, including the presence of dogs	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Under alternative E, dog walking under voice and sight control would be allowed in a VSCA on Rodeo Beach and South Rodeo Beach. On-leash dog walking would be allowed on the footbridge and access trails to the beach. As in all alternatives, the lagoon would be closed to dogs and people. Alternative E would result in the same impacts on shorebirds, gulls, terns, and marine mammals as previously described in alternative C. The installation of the post-and-cable fence along the west end of Rodeo Lagoon would discourage visitors from accessing the lagoon, which would remain closed to people and dogs, but would not physically exclude dogs from this area. A fence more impervious to dogs in this area is not feasible because winter storm waves wash over the entire beach, and wind-driven litter and debris would be trapped in the fence. Shorebirds, gulls, and terns roosting or feeding in the VSCA would be disrupted by dogs under voice and sight control on North Rodeo Beach. Marine mammals that become stranded or haul out on the beach in the VSCA could be subjected to disturbance from the presence of unleashed dogs, which could bite, bark at, or clamber over the animals. Therefore, alternative E would result in long-term minor to moderate adverse impacts on marine mammals and shorebirds in the VSCA. The majority of birds at Rodeo Beach/ South Rodeo Beach occur at the lagoon, but there are also a lesser number of birds that use the unfenced portion of the lagoon near the inlet/outlet.

The VSCA would encompass the entire beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach; there is no on-leash area (non-VSCA) designated for Rodeo Beach as part of alternative E. Birds roosting or feeding in the VSCA may be forced to abandon the area or relocate. At this site, however, there is no other habitat nearby, which may cause birds to flush and settle repeatedly, causing energy reserves to be used up. Therefore, overall impacts on wildlife under alternative E would be long term and would range from minor to moderate and adverse, since impacts would depend on the seasonal presence of marine mammals and birds as well as the level of activity at the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Rodeo Beach, any dog walker, commercial or private, could obtain a permit to walk more than three dogs with a limit of six dogs on leash. Impacts on wildlife from permit holders with six dogs off leash would be expected to increase under this alternative. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, but has recently begun to increase, it is likely that this alternative may increase the number of commercial dog walkers at this site in the future. Therefore, commercial dog walking under alternative E would have a negligible to long-term minor, adverse impact on wildlife.

Cumulative Impacts. The long-term minor to moderate adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative E were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the long-term minor to moderate adverse impacts on wildlife from alternative E would result in negligible to long-term, minor, adverse cumulative impacts on wildlife.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	The VSCA encompasses the entire beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; impacts would depend on the seasonal presence of the birds and the level of activity at the site, including the presence of dogs	No change, assuming compliance	Negligible to long-term, minor, adverse cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would provide a VSCA on the full length of the main beach between the ocean and the proposed post-and-cable fence to be installed to protect the shoreline habitat at the western end of Rodeo Lagoon, and south to the sea stacks that divide the main beach from South Rodeo Beach. The VSCA would include portions of the sparsely vegetated foredunes that extend from the crest of the beach to the lagoon. On-leash dog walking would be allowed on the pedestrian bridge and access steps to the beach, and South Rodeo Beach would be closed to dogs. On-leash dog walking would also be permitted from the parking lot to the intersection of Bunker and McCullough Roads via the North Lagoon Loop Trail, Miwok Trail and Rodeo Valley Trail. Old Bunker Fire Road Loop, Batteries Loop Trail, Rodeo Avenue Trail, and Morning Sun Trail would be areas where on-leash dogs are permitted. Rodeo Lagoon would be closed to people and dogs for overall resource protection. The installation of the post-and-cable fence along the west end of Rodeo Lagoon would discourage visitors from accessing the lagoon, but would not physically exclude dogs from this area. A fence more impervious to dogs in this area is not feasible because winter storm waves wash over the entire beach, and wind-driven litter and debris would be trapped in the fence. Shorebirds, gulls, and terns roosting or feeding in the VSCA would be disrupted by dogs under voice and sight control on North Rodeo Beach. Marine mammals that become stranded or haul out on the beach in the VSCA could be subjected to disturbance from the presence of unleashed dogs, which could bite, bark at, or clamber over the animals. Therefore, the preferred alternative would result in long-term minor to moderate adverse impacts on marine mammals and shorebirds in the VSCA; impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Birds roosting or feeding in the VSCA may be forced to abandon the area or relocate, but at this site, there is no other habitat nearby, which may cause birds to flush and settle repeatedly, causing energy reserves to be used up. The VSCA encompasses a large portion of beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; there is no on-leash area (non-VSCA) designated for Rodeo Beach as part of alternative C. Therefore, the overall impacts on wildlife under the preferred alternative would be long term and would range from minor to moderate and adverse, since impacts would depend on the seasonal presence marine mammals and birds as well as the level of activity at the site.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Rodeo Beach, any dog walker, commercial or private, could obtain a permit to walk

more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, but has recently begun to increase, it is likely that this alternative may increase the number of commercial dog walkers at this site in the future. Therefore, commercial dog walking under the preferred alternative would have a negligible to long-term minor adverse impact on wildlife.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had minor to moderate adverse effects on wildlife such as marine mammals and birds at Rodeo Beach/South Rodeo Beach. The impacts on wildlife from this spill at Rodeo Beach/South Rodeo Beach lasted for 8 to 9 months. However, by the time this dog management plan/EIS is implemented the adverse impacts on wildlife at Rodeo Beach/South Rodeo Beach should be reduced to a negligible level.

The long-term minor to moderate adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the long-term minor to moderate adverse impacts on wildlife from the preferred alternative would result in negligible to long-term minor adverse cumulative impacts on wildlife.

RODEO BEACH/SOUTH RODEO BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	VSCA encompasses a large portion of beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; impacts would depend on the seasonal presence of the birds and the level of activity at the site	No change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

SAN FRANCISCO COUNTY SITES

Crissy Field

Common to All Alternatives. Impacts from dogs as a result of the two different definitions of the Crissy Field WPA (the 36 CFR 7.97(d) definition for alternative A and the Warming Hut to approximately 900 feet east of the former Coast Guard Pier definition for alternatives B–F) would be the same for all alternatives. Even though the WPA would be expanded for alternatives B–F, this change would not influence the overall impacts analysis at this site because it would neither increase nor decrease the impacts at Crissy Field described in the paragraphs that follow. Further explanation of these two definitions can be found in the "Current Regulations and Policies" section of chapter 2.

Alternative A: No Action. Currently, Crissy Field is a moderate to high use site for on-leash and voice control dog walking at the beach and other areas of the site and has low compliance with dog walking regulations. Dogs are allowed under voice control throughout Crissy Field except for the picnic and parking area (which require on-leash dog walking) and a seasonal leash restriction in the WPA for protection of the federally threatened western snowy plover. Crissy Marsh is currently closed to people and dogs. The seasonal leash restriction is in effect the majority of the year (July 1 through May 15), but the site has high incidences of dogs in the WPA violating the seasonal leash restriction. From 2008 through 2011, a total of 510 dog-related incidents were reported. Of the 510 incidents, 283 incidents were for having dogs off leash within the Crissy Field WPA when the seasonal leash restriction was in effect (table 20a). Other common incidents include violation of a closed area (58 incidents), having dogs off leash (65 incidents), and possession of a pet in a closed area (15). Violations have been issued for having pets in Crissy Field Lagoon, which is closed to humans and pets. In June through July 2006, there were two observed instances of dogs chasing birds within the Crissy Field WPA (Hatch et al. 2007a, 14) and during the September 2006 through April 2007 surveys, there were a total of three observations of dogs chasing shorebirds within the Crissy Field WPA (Hatch et al. 2007b, 5). There were no observations of dogs chasing shorebirds or plovers during the July 2007 through February 2008 surveys within the Crissy Field WPA (Hatch et al. 2008, 3). Dog presence, as well as unleashed dogs barking at or chasing after roosting or feeding birds at this site, could disturb wildlife. This type of disturbance could cause loss of preferred habitat as well as energy loss in migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. The park has documented the highest year-round bird densities in the Crissy Marsh (discussed in more detail in the "Wildlife in Wetlands and Aquatic Communities" section), with slightly lower densities in the dune swale and rear dune; bird species richness has been reported at its highest in the wetland, with slightly less richness in the beach and nearshore areas (Ward and Ablog 2006, 25–26 and 92–93). Although bird species richness in the WPA is lower in comparison to other Crissy Field habitats like the marsh (which may be a result of the intense visitor and dog use of the site), there are often relatively large flocks of killdeer in the dunes in the WPA. Additionally, marine mammals that haul out or strand at the beach at

Crissy Field are occasionally affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water. Alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using beach/dune habitat, including the WPA, because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking occurs regularly at Crissy Field. Commercial dog walking would continue to contribute to the long-term minor to moderate adverse impacts on wildlife. Commercial dog walkers with multiple dogs under voice control would impact wildlife by continued disturbances to wildlife by dogs.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. The PTMP was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). Management objectives in the PTMP that are applicable to wildlife include identifying and protecting sensitive wildlife species, and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forests are being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on wildlife at or in the vicinity of Crissy Field.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Crissy Field occurs regularly. Therefore, the interim compendium amendment would have a beneficial effect on coastal communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing trampling, digging, and dog waste.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife

such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term, and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term minor to moderate adverse impacts on wildlife from dogs at Crissy Field under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs, the interim permitting program and the PTMP should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

CRISSY FIELD ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Shorebirds on beach and in WPA (seasonal leash restriction is often violated in the WPA) would occasionally to frequently be subjected to impacts from on-leash and voice control dogs through dogs barking at, chasing after, and being in proximity to roosting or feeding birds; although shorebird numbers are low at the beach they are high in the marsh; visitor use is high at this site; marine mammals would occasionally be subjected to impacts from dogs on the beach	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the promenade, Crissy Airfield, East and Central beaches, paths leading to Central Beach, trails and grassy areas near East Beach, around the Old Coast Guard Station, and on the Mason Street Bike Path. Dogs would be prohibited in the WPA, and Crissy Marsh and fenced dune areas would remain closed to dogs. On-leash dog walking would not allow dogs to roam freely along the beach. Due to physical restraint, it is highly unlikely that dogs would access the WPA, resulting in protection for resting and feeding shorebirds and waterbirds that may use the area year-round as well as elimination of chasing after, and disturbance and reduction of flushing from preferred areas (the WPA). Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. This could cause birds to flee or relocate, using energy reserves unnecessarily, and could result in the loss of preferred habitat. Crissy Field also has a fenced marsh that supports high bird use by shorebirds, wading birds, and waterbirds in addition to the limited numbers of shorebirds that use the beach/ocean shoreline. The combination of on-leash dog walking requirements and the fence that surrounds the marsh would effectively keep dogs out of the area. Therefore, assuming compliance, overall impacts on wildlife as a result of alternative B would be long term and would range from negligible to minor and adverse, because shorebirds and waterbirds as

well as marine mammals may occasionally be affected by on-leash dogs. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site, which in turn would affect the presence of birds at the site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Crissy Field, dogs walked by commercial dog walkers would create the majority of the adverse impacts on wildlife from dogs at the site. Overall impacts on wildlife from dogs walked by both commercial dog walkers and private individuals would be negligible to long term minor and adverse.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. The PTMP was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). Management objectives in the PTMP that are applicable to wildlife include identifying and protecting sensitive wildlife species, and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forests are being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on wildlife at or in the vicinity of Crissy Field.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term, and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The negligible to long-term minor adverse impacts on wildlife from dogs at Crissy Field under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from

the restoration projects provided by the park stewardship programs and the PTMP should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

CRISSY FIELD ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, no dogs would be allowed in the WPA or on East Beach; therefore, there would be no impact on wildlife in this area. Crissy Marsh is currently closed to dogs. On-leash dog walking would be allowed on the promenade and the Mason Street Bike Path, as well as in the picnic area and parking area. Two VSCAs would be provided under this alternative: one on Crissy Airfield and one along Central Beach. On-leash dog walking would be allowed on the remainder of Crissy Airfield and access paths to the Central Beach VSCA. The addition of the Central Beach VSCA would result in impacts on wildlife using the beach VSCA. Shorebirds use the habitat at the Central Beach VSCA and off-leash dogs could disturb and/or harass the birds, causing them to flush, which would result in the birds fleeing to the WPA, East Beach, or other areas where dogs are not allowed. Therefore, indirect impacts on wildlife in the Central Beach VSCA would occur due to wildlife avoiding the area during periods of activity or altogether. Also, marine mammals that strand or haul out in the beach VSCA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Therefore, alternative C would have long-term moderate adverse impacts on shorebirds, gulls, terns, and marine mammals using the beach inside the designated Central Beach VSCA.

The long-term moderate adverse impacts on wildlife in the Central Beach VSCA would occur in a small portion of the site when compared to the site as a whole (the VSCA encompasses about one-third of the beach habitat at the site). Assuming compliance with proposed regulations, alternative C would result in overall long-term minor adverse impacts on wildlife because occasional disturbances to wildlife from dogs would occur, although shorebirds and marine mammals would be protected through WPA site closure to dogs and by physical restraint of dogs on leash in other areas.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Crissy Field, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level.

Since commercial dog walking is common at Crissy Field**,** impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized below in overall impacts; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Crissy Field under alternative C were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs and the PTMP should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

CRISSY FIELD ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Shorebirds would be protected through WPA site closure to dogs and by physically restraining dogs on leash in other areas; the Central Beach VSCA encompasses about one-third of the beach habitat at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow dogs on leash along the promenade and the eastern portion of Crissy Airfield. Dogs would not be allowed in the WPA, East Beach or Central Beach. Crissy Marsh is currently closed to dogs. Dogs would be allowed under voice and sight control only on the western portion of Crissy Airfield (not beach habitat) in a VSCA. There would be no impact on coastal community habitat or wildlife in the airfield VSCA, which supports manicured grass. Assuming compliance, overall impacts on shorebirds, gulls, and terns using beach habitat would be negligible. Prohibiting dogs in beach areas would not allow dogs to access stranded marine mammals.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Crissy Field under alternative D were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs and the PTMP combined with the negligible impacts from the past oil spill and from any development or construction actions and the negligible impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

CRISSY FIELD ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Prohibiting dogs on all beach areas would protect shorebirds and stranded or hauled-out marine mammals; no coastal community habitat or wildlife exists in airfield VSCA	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking in the WPA, at East Beach, in the picnic area and parking area, and along the promenade and the Mason Street Bike Path. One VSCA would be established on Crissy Airfield and another VSCA would be established at Central Beach. Crissy Marsh is currently closed to dogs. As a result of the VSCAs, the presence of dogs, as well as their barking and running, in the Central Beach VSCA could disturb shorebirds, gulls, and terns using the beach/dune habitat for roosting or feeding, causing them to flush. This would result in the birds fleeing to the WPA, East Beach, or other areas where dogs are not allowed, resulting in indirect impacts on wildlife in the Central Beach VSCA due to avoidance of the area during periods of activity or altogether. Also, marine mammals that strand or haul out in the Central Beach VSCA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Therefore, alternative E would have long-term moderate adverse impacts on shorebirds, gulls, terns, and marine mammals using the beach inside the designated VSCA.

The long-term moderate adverse impacts on wildlife in the Central Beach VSCA would occur in a small portion of the site when compared to the site as a whole (the Central Beach VSCA encompasses about one-third of the beach habitat at the site). However, dogs would be allowed in the majority of the coastal community at Crissy Field, including the WPA and East Beach (on leash) as well as in the VSCA on Crissy Airfield and the VSCA on Central Beach (off leash). No similar habitat to Crissy Marsh exists at the site where dogs are not allowed, and on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach. Therefore, assuming compliance with the proposed regulations, alternative E would result in overall long-term minor to moderate adverse impacts on wildlife because occasional to frequent disturbances to wildlife from dogs would occur at the site, including at the WPA, which would allow on-leash dogs.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Crissy Field, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field**,** impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor to moderate adverse impacts on wildlife from dogs at Crissy Field under alternative E were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship

programs and the PTMP should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

CRISSY FIELD ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Dogs would be allowed in the majority of the coastal community at Crissy Field, including the WPA and East Beach (on leash) as well as one VSCA on Crissy Airfield and one VSCA on Central Beach (off leash); the beach VSCA encompasses about one-third of the beach habitat at the site; no similar habitat to Crissy Marsh exists at the site where dogs are not allowed; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach	No change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

Alternative F: Preferred Alternative. Under the preferred alternative, no dogs would be allowed in the WPA, the fenced areas, picnic areas, the western portion of the airfield, or on East Beach; therefore, there would be no impact on wildlife in this area. Crissy Marsh is currently closed to dogs. On-leash dog walking would be allowed on the promenade and the Mason Street Bike Path, as well as in the picnic area and parking area. Two VSCAs would be provided under this alternative: one on the eastern section of Crissy Airfield and one along Central Beach. The addition of the beach VSCA would result in impacts on wildlife using the beach VSCA. Shorebirds use the habitat at the beach VSCA and off-leash dogs could disturb and/or harass the birds, causing them to flush, which would result in the birds fleeing to the WPA, East Beach, or other areas where dogs are not allowed. Therefore, indirect impacts on wildlife in the beach VSCA would occur due to wildlife avoiding the area during periods of activity or altogether. Also, marine mammals that strand or haul out in the beach VSCA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Therefore, the preferred alternative would have long-term moderate adverse impacts on shorebirds, gulls, terns, and marine mammals using the beach inside the designated beach VSCA.

The long-term moderate adverse impacts on wildlife in the beach VSCA would occur in a small portion of the site when compared to the site as a whole (the VSCA encompasses about one-third of beach habitat at the site). Assuming compliance with proposed regulations, the preferred alternative would result in overall long-term minor adverse impacts on wildlife because occasional disturbances to wildlife from dogs would occur, although shorebirds and marine mammals would be protected through WPA site closure to dogs and by physically restraining dogs on leash in other areas.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Crissy Field, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, the areas where a dog walker with more than three dogs can go are limited to the two VSCAs, the direct beach access trails connecting the VSCAs, the Promenade (from the parking lot to the eastern-most trail leading to Central Beach only), and the Mason Street Bike Path, thus limiting the potential impacts on coastal communities. The permits could restrict use by time and area. The permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field**,** impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized below in overall impacts; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. The PTMP was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). Management objectives in the PTMP that are applicable to wildlife include identifying and protecting sensitive wildlife species, and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forests are being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on wildlife at or in the vicinity of Crissy Field.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and

by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term minor adverse impacts on wildlife from dogs at Crissy Field under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs and the PTMP should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

CRISSY FIELD PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Shorebirds would be protected through WPA site closure to dogs and by physically restraining dogs on leash in other areas; the Central Beach VSCA encompasses about one-third of the beach habitat at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Baker Beach and Bluffs to Golden Gate Bridge

Alternative A: No Action. Dog walking under voice control is allowed on the beach (South Beach and North Beach). On-leash dog walking is allowed in the picnic and parking areas, as well as on the other trails at the site except the Batteries to Bluffs Trail, where no dogs are allowed. Baker Beach is a low to moderate use area for on-leash and voice control dog walking at the beach and other areas of the site. A total of 86 dog-related incidents were reported between 2008 and 2011; the majority of incidents were for having dogs off leash or within a closed area (table 22a). Baker Beach has fairly high numbers of shorebirds, and coastal beach habitat is extensive at this site. In addition, the water at Lobos Creek is quite attractive to gulls, and this area is in the voice control area for dogs at the southern portion of Baker Beach.

Since alternative A would allow voice control dog walking on the beach, dog presence as well as dogs chasing after, barking at, and coming in close proximity to migrating and wintering shorebirds, gulls, and terns roosting or feeding on the beach would continue. This type of disturbance by dogs could result in loss of preferred habitat as well as energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. Additionally, marine mammals that haul out or strand at Baker Beach would occasionally be affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water. Therefore, alternative A would result in continued long-term moderate adverse impacts on wildlife using beach/dune habitat because continued frequent and repeated disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Baker Beach and Bluffs to Golden Gate Bridge, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Baker Beach and Bluffs to Golden Gate Bridge is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the deterioration of native dune communities related to dog waste and digging and trampling by dogs.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term moderate adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Shorebirds on beach would frequently be subjected to impacts from on-leash and voice control dogs through dogs barking at, chasing after, and being in proximity to roosting or feeding birds; shorebird numbers are fairly high, visitor use is low to moderate, and coastal habitat is extensive at this site; marine mammals would occasionally be subjected to impacts from dogs on the beach	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on North Beach, in the picnic and parking areas, and on all trails leading to the beaches except the Batteries to Bluffs Trail or trails leading to the Batteries to Bluffs Trail, where no dogs would be allowed. Dogs would be allowed on leash on South Beach. On-leash dog walking would not allow dogs to roam freely along the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. This could cause birds to use energy reserves unnecessarily and could result in the loss of preferred habitat. Therefore, assuming compliance, overall impacts on wildlife as a result of alternative B would be long term and would range from negligible to minor and adverse, because shorebirds and waterbirds as well as marine mammals may not be affected or may occasionally be affected by on-leash dogs. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

The water at Lobos Creek is quite attractive to gulls and this area is within the on-leash area for dogs. On-leash dog walking, if occurring in proximity to wildlife, would cause shorebirds, gulls, and terns roosting and/or feeding on the beach to flee to nearby areas of less activity (if available) or to relocate entirely; both actions would result in unnecessary energy expenditure by fleeing birds.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Dog walking restrictions under alternative C would be the same as alternative B, and impacts would be the same, assuming compliance: negligible to long-term minor adverse impacts on marine mammals and shorebirds. Impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Baker Beach, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site would be the same as those under alternative B: negligible cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, Baker Beach and Bluffs to Golden Gate Bridge would be divided into on-leash areas and no-dog areas, and all trails providing access to the on-leash areas would require on-leash dog walking as well. Dogs would be prohibited on the beach north of the north parking lot and on the trails that access that section of beach. Dogs would be allowed on only a portion of the beach, and physically restraining dogs on leash would protect shorebirds and marine mammals on the beach, but on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach. In addition, the water at Lobos Creek is quite attractive to gulls and this area is in the on-leash area for dogs at the southern portion of Baker Beach. Therefore, alternative D impacts on wildlife would be negligible to long term, minor, and adverse; the impact range is due to changing seasonal presence of the birds and level of activity at the site. Beach habitat is available north of the parking lot (which would be prohibited to dogs) and in close proximity to Baker Beach. Shorebirds, gulls, and terns might flee from dogs on leash to other portions of the beach, and displacement of birds to another location would have an impact on wildlife.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative D were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for

impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Implementation of alternative E at Baker Beach would provide a VSCA on the beach south of the north parking lot to the draft plan/SEIS boundary (South Beach). On-leash dog walking would be allowed on the remaining beach (North Beach) and on trails, including those through dune habitat, that access the beach. No dogs would be allowed on the Batteries to Bluffs Trail. Because dogs restricted on leash would be allowed along the northern portion of the beach and a VSCA would be designated for the southern portion of Baker Beach, the presence of dogs, as well as their barking and running, in the VSCA would disturb shorebirds, gulls, and terns using the beach/dune habitat for roosting or feeding. In addition, the water at Lobos Creek is quite attractive to gulls and this area is in the off-leash area for dogs at the southern portion of Baker Beach. When dogs and dog walkers are present in the VSCA, birds using the beach in the VSCA could flee from the VSCA to other areas where dogs are not allowed or they may flush and return and be repeatedly disturbed. Because of mobility, wildlife can usually avoid areas where dogs are present during peak activity or habituate to these activities, but loss of preferred habitat would still indirectly affect wildlife. In addition, marine mammals that strand or haul out in the VSCA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals. Therefore, alternative E impacts on wildlife in the VSCA would be long term, moderate, and adverse because frequent disturbances from dogs would occur; however, impacts would depend on the seasonal presence of the birds and the level of activity at the site.

The long-term moderate adverse impacts from dogs in the VSCA would occur in about one-third of the beach habitat at the site, and on-leash dog walking would be allowed in the remaining portion of Baker Beach and Bluffs to Golden Gate Bridge. Physically restraining dogs on leash in some areas of the site would protect shorebirds and other wildlife such as marine mammals, but the presence of dogs barking and running (even while on leash) would occasionally to frequently disturb wildlife. Therefore, the overall impacts on wildlife at Baker Beach and Bluffs to Golden Gate Bridge would be long term and would range from minor to moderate and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Baker Beach, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level.

Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor to moderate adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative E were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs on leash in some areas of the site would protect shorebirds and other wildlife but the presence of dogs barking and running (even while on leash) would disturb wildlife; VSCA encompasses about one-third of beach habitat at the site	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the section of Baker Beach north of Baker Beach Access Trail #2 and on the beach access trails leading to that section of beach, as well as on the Coastal Trail. Dogs would be prohibited in the section of beach south of the north parking lot (approximately half of the beach), on the trails leading to the southern section of the beach, and on the Dune Trail, the Batteries to Bluffs Trail, and the Battery Crosby Trail. Dogs would be allowed on only a portion of the beach, and physically restraining dogs on leash would protect shorebirds and marine mammals on the beach, but on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach. In addition, the water at Lobos Creek is quite attractive to gulls and this area is in the on-leash area for dogs at the southern portion of Baker Beach. Therefore, the preferred alternative impacts on wildlife would be negligible to long term, minor, and adverse; the impact range is due to the changing seasonal presence of the birds and the level of activity at the site. Beach habitat is available north of the parking lot (which is prohibited to dogs) and in close proximity to Baker Beach and Bluffs to Golden Gate Bridge. Shorebirds, gulls, and terns might flee from dogs on leash to other portions of the beach, and displacement of birds to another location would have an impact on wildlife.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Baker Beach, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. An NPS-issued permit would be limited to the north parking lot, Baker Beach Access Trail #2, and the beach north of the trail. Permits could further restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Ocean Beach (Snowy Plover Protection Area)

North of Stairwell 21 and South of Sloat Boulevard has a separate analysis and follows below the SPPA analysis.

Alternative A: No Action. Ocean Beach has a designated SPPA that seasonally restricts dog walking to on leash to protect the western snowy plover during its overwintering season (July 1 through May 15); the SPPA also provides protection for other wintering and migrant shorebirds. Ocean Beach Trail, adjacent to the Great Highway, is open to on-leash dog walking year-round. At the entire Ocean Beach site, there were 969 dog-related incidents reported from 2008 through 2011. The majority of the incidents reported were for having a dog off leash within the Ocean Beach SPPA (729 recorded incidents, table 25a) during the period (July 1 through May 15) when dogs must be leashed. Another 166 violations were recorded as off-leash violations (89), violation of a closed area (75), and pet in a closed area (5). Current compliance with the seasonal leash restriction (36 CFR 7.97(d)) is estimated at less than 50 percent by the NPS, and there have been multiple instances where dogs have flushed or chased shorebirds or snowy plovers (table 10) as documented in NPS monitoring reports by Park Natural Resources Division (NPS 2008a; Hatch et al. 2007a, 12; Hatch et al. 2007b, 4-6; Hatch et al. 2008, 2-4). At this site, harassment (flushing) by dogs and people is common during periods of peak use by migratory/wintering shorebirds (August–May) (Hatch 1996, 9; USFWS 2007a, 64). At Ocean Beach, shorebird numbers are high (particularly Central Ocean Beach (Beach Watch 2009)), visitor use is moderate to high, and coastal habitat is represented by a long stretch of beach at this site. Additionally, there are areas of concentrations/congregations of roosting gulls and terns that are affected by off-leash dogs at this site.

Under alternative A, the seasonal restriction would continue, with dog walking under voice control allowed the remainder of the year (May 15 through July 1) in the SPPA. Since alternative A would allow voice control dog walking on the beach outside the SPPA, dog presence as well as dogs chasing after, barking at, and coming in close proximity to migrating and wintering shorebirds, gulls, and terns roosting or feeding on the beach would continue. This type of disturbance by dogs could in turn result in energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. Additionally, marine mammals that haul out or strand at Ocean Beach would be affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water. Therefore, alternative A would result in continued long-term moderate to major adverse impacts on wildlife using beach/dune habitat because continued frequent and repeated disturbances to wildlife from dogs would occur, potentially limiting their use of preferred habitat. Disturbance by dogs would cause

frequent responses by wildlife because the site has high shorebird abundance and diversity, further supporting the conclusion of a long-term moderate to major adverse impact in the SPPA.

Under alternative A, no permit system exists for dog walking. At Ocean Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

Projects planned in or near the coastal community that may affect shorebirds include the *Ocean Beach–Great Highway Erosion Control Project*, which is developing long-term solutions to beach and bluff erosion problems at Ocean Beach along Highway 1 (City and County of San Francisco 2008, 3, 7), but could have long-term adverse effects on shorebird habitat.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Ocean Beach is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing trampling, digging, and dog waste.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level. The *Ocean Beach Master Plan* includes plans to restore habitat at Ocean Beach, resulting in beneficial impacts on coastal community wildlife.

The long-term moderate to major adverse impacts on wildlife from dogs at under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs and the interim permitting program

should reduce some of the adverse impacts on wildlife from alternative A; however, the effects from the erosion control project on shorebird habitat would be adverse. These beneficial and adverse effects from projects at Ocean Beach may balance out when combined. In addition, the impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, moderate to major, and adverse.

OCEAN BEACH SPPA ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate to major adverse impacts	The seasonal leash restriction is often violated in the SPPA; dogs would continue to disturb and/or harass the birds, potentially limiting their use of preferred habitat, and to interrupt roosting or foraging behavior, which causes the expenditure of energy and could affect migration and breeding; shorebird numbers are high, visitor use is high, and coastal habitat is extensive at this site	N/A	Long-term moderate to major adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs in the SPPA, allowing on-leash dog walking only on the Ocean Beach Trail adjacent to the Great Highway. On-leash dog walking would not allow dogs to roam freely along the beach. Due to physical restraint on leash, it is highly unlikely that off-leash dogs would access the SPPA, resulting in protection for resting and feeding shorebirds and waterbirds that may use the area year-round as well as elimination of chasing after or disturbance and reduction of flushing from preferred areas (the SPPA). Therefore, assuming compliance, there would be no overall impact on wildlife as a result of alternative B in the SPPA because shorebirds and marine mammals may not be affected by disturbance from dogs because dogs would be prohibited on the SPPA beach. Alternative B would result in the protection of a large expanse of beach habitat and shorebirds through year-round closure of the SPPA to dogs and by physically restraining dogs on leash in other areas (along the paved Great Highway).

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. However, no overall impact on wildlife in the SPPA would occur from commercial dog walkers because shorebirds and marine mammals would not be affected by disturbance from dogs since dogs would be prohibited on the SPPA beach.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

Projects planned in or near the coastal community that may affect shorebirds include the *Ocean Beach–Great Highway Erosion Control Project*, which is developing long-term solutions to beach and bluff erosion problems at Ocean Beach along Highway 1 (City and County of San Francisco 2008, 3, 7), but could have long-term adverse effects on shorebird habitat.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level. The *Ocean Beach Master Plan* includes plans to restore habitat at Ocean Beach, resulting in beneficial impacts on coastal community wildlife.

The lack of impacts on wildlife from dogs at the Ocean Beach SPPA under alternative B was considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Ocean Beach; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the lack of impacts from alternative B would result in negligible cumulative impacts on wildlife.

OCEAN BEACH SPPA ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Shorebirds and beach habitat would be protected through SPPA site closure to dogs	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would prohibit dogs in the SPPA, allowing on-leash dog walking only on the Ocean Beach Trail adjacent to the Great Highway. Due to physical restraint of dogs on-leash in other areas of the site, it is highly unlikely that dogs would access the SPPA, resulting in protection for resting and feeding shorebirds and waterbirds that may use the area year-round as well as elimination of chasing after and disturbance and reduction of flushing from preferred areas (the SPPA). Alternative C would result in the protection of habitat and shorebirds through closure of the SPPA to dogs and by physically restraining dogs on leash in nearby areas. Assuming

compliance with proposed regulations, alternative C would result in no impact on shorebirds and marine mammals in the SPPA.

No impact on wildlife in the SPPA would occur from commercial dog walkers because shorebirds and marine mammals would not be affected by disturbance from dogs because dogs would be prohibited on the SPPA beach.

Cumulative Impacts. The lack of impacts on wildlife from dogs at the Ocean Beach SPPA under alternative C was considered together with the effects of the projects mentioned above in alternative B. There would be a combination of beneficial and adverse effects from projects in and around Ocean Beach; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the lack of impacts from alternative C would result in negligible cumulative impacts on wildlife.

OCEAN BEACH SPPA ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Shorebirds and marine mammals would be protected through SPPA site closure to dogs	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Dog walking restrictions at the Ocean Beach SPPA under alternative D would be the same as alternative B, and impacts would also be the same: no impact on wildlife.

No impact on wildlife in the SPPA would occur from commercial or permitted dog walkers because shorebirds and marine mammals would not be affected by disturbance from dogs because dogs would be prohibited on the SPPA beach.

Cumulative Impacts. The cumulative impacts on wildlife at Ocean Beach on wildlife under alternative D would be the same as those under alternative B: negligible.

OCEAN BEACH SPPA ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Shorebirds and habitat would be protected through SPPA site closure to dogs	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the beach in the SPPA during all seasons. On-leash dog walking would restrain or prevent dog access to stranded marine mammals; however, activity resulting from walking dogs, such as their barking and lunging in proximity to birds on the beach, could cause birds to flee or relocate, using energy reserves unnecessarily. Impacts would be due to disturbance from on-leash dog walking and dog walkers using the beach habitat where these birds forage and rest during migration and as winter residents; dogs would potentially limit shorebird use of preferred habitat. Therefore, alternative E impacts on wildlife in the SPPA would be long term, minor, and adverse because this section of beach has a high abundance of shorebirds and although dogs would be required to be on leash, occasional disturbances to wildlife from dogs could occur as a result of this alternative.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Ocean Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since commercial dog walking activity is not common at Ocean Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at the SPPA under alternative E were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative E; however, the effects on shorebird habitat from the erosion control project would be adverse. These beneficial and adverse effects from projects at Ocean Beach may balance out when combined. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

OCEAN BEACH SPPA ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	On-leash dogs would be allowed in the SPPA during all seasons and would disturb shorebirds and affect wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; dogs would potentially limit shorebird use of preferred habitat	Beneficial, assuming compliance	Long-term minor adverse cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative B and would prohibit dogs in the SPPA, allowing on-leash dog walking only on the Ocean Beach Trail adjacent to the Great Highway. Due to physical restraint of dogs on a leash, it is highly unlikely that dogs would access the SPPA, resulting in protection for resting and feeding shorebirds and waterbirds that may use the area year-round as well as elimination of chasing after and disturbance and reduction of flushing from preferred areas (the SPPA). The preferred alternative would result in the protection of habitat and shorebirds through closure of the SPPA to dogs, and by physically restraining dogs on leash in nearby areas. Assuming compliance with the proposed regulations, the preferred alternative would result in no impact on shorebirds and marine mammals in the SPPA.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Ocean Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. However, no overall impact on wildlife in the SPPA would occur from commercial dog walkers because shorebirds and marine mammals would not be affected by disturbance from dogs since dogs would be prohibited on the SPPA beach.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

Projects planned in or near the coastal community that may affect shorebirds include the *Ocean Beach–Great Highway Erosion Control Project*, which is developing long-term solutions to beach and bluff erosion problems at Ocean Beach along Highway 1 (City and County of San Francisco 2008, 3, 7), but could have long-term adverse effects on shorebird habitat.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level. The *Ocean Beach Master Plan* includes plans to restore habitat at Ocean Beach, resulting in beneficial impacts on coastal community wildlife.

The lack of impact on wildlife from dogs at the SPPA under the preferred alternative was considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Ocean Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the lack of impact from the preferred alternative would result in negligible cumulative impacts on wildlife.

OCEAN BEACH SPPA PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Shorebirds and marine mammals would be protected through SPPA site closure to dogs	Beneficial, assuming compliance	Negligible cumulative impacts

Ocean Beach North of Stairwell 21 and South of Sloat Boulevard

Alternative A: No Action. Under current conditions, dogs are allowed under voice control on the beach both north of Stairwell 21 and south of Sloat Boulevard. This site has documented high visitor use and compliance with the current dog policies at Ocean Beach is considered poor; 969 dog-related incidents were reported from 2008 through 2011. The majority of the incidents reported were for having a dog off leash within the Ocean Beach SPPA (729 recorded incidents, table 25a) during the period (July 1 through May 15) when dogs must be leashed. Another 166 violations were recorded as off-leash violations (89), violation of a closed area (75), and pet in a closed area (5). Ocean Beach south of Sloat Boulevard has high shorebird use in a very narrow stretch of beach and north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use due to convenient parking. Additionally, there are areas of concentrations/congregations of roosting gulls and terns that are affected by off-leash dogs at this site.

Since alternative A would allow voice control dog walking on the beach, dog presence as well as dogs chasing after, barking at, and coming in close proximity to migrating and wintering shorebirds, gulls, and terns roosting or feeding on the beach would continue. This type of disturbance by dogs could result in energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. Additionally, marine mammals that haul out or strand at Ocean Beach could be affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after the mammals back into the water. Therefore, under alternative A, long-term moderate adverse impacts on wildlife would result because frequent wildlife responses to disturbance from dogs would continue to occur at the site, potentially limiting wildlife's use of preferred habitat.

Under alternative A, no permit system exists for dog walking. At Ocean Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. The long-term moderate adverse impacts on wildlife from dogs at Ocean Beach under alternative A were considered together with the effects of the projects mentioned above for the Ocean Beach SPPA. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative A; however, the effects from the erosion control project on shorebird habitat would be adverse. These beneficial and adverse effects from projects at Ocean Beach may balance out when combined. The *Ocean Beach Master Plan* includes plans to restore habitat at Ocean Beach, resulting in beneficial impacts on coastal community wildlife. These plans would not be great enough to offset other adverse cumulative projects at Ocean Beach.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Ocean Beach is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing trampling, digging, and dog waste.

In addition, the impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA and the interim permitting program would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, moderate, and adverse.

OCEAN BEACH NORTH OF STAIRWELL 21 AND SOUTH OF SLOAT BOULEVARD ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Off-leash dogs would continue to disturb and/or harass birds and potentially limit their use of preferred habitat and interrupt roosting or foraging behavior, which causes expenditure of energy and could affect migration and breeding; south of Sloat Boulevard has high shorebird use in a very narrow beach and north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use; marine mammals would occasionally be subjected to impacts from dogs on the beach	N/A	Long-term moderate adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the beach north of Stairwell 21 and south of Sloat Boulevard. On-leash dog walking would not allow dogs to roam freely along the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. On-leash dog walking, if occurring in proximity to wildlife, would cause birds roosting and/or feeding on the beach to flee to nearby areas of less activity (e.g., the adjacent SPPA) or to relocate entirely; both actions would result in loss of preferred habitat and unnecessary energy expenditure by fleeing birds. Ocean Beach south of Sloat Boulevard has high shorebird use in a very narrow stretch of beach and north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use. Therefore, assuming compliance, overall impacts on wildlife as a result of alternative B would be long term, minor, and adverse because shorebirds and waterbirds as well as marine mammals may occasionally be affected by on-leash dogs.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Ocean Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard under alternative B were considered together with the effects of the projects mentioned above for the Ocean Beach SPPA. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative B; however, the effects from the erosion control project on shorebird habitat would be adverse. These beneficial and adverse effects from projects at Ocean Beach may balance out when combined.

In addition, the impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis

for this alternative. Cumulative impacts on wildlife at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard under this alternative would be expected to be long term, minor, and adverse.

OCEAN BEACH NORTH OF STAIRWELL 21 AND SOUTH OF SLOAT BOULEVARD ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; south of Sloat Boulevard has high shorebird use on a very narrow beach and north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use	Beneficial, assuming compliance	Long-term minor adverse cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Implementation of alternative C along these portions of Ocean Beach would establish a VSCA on the length of beach north of Stairwell 21 and would prohibit dogs on the remaining beach, located south of Sloat Boulevard. At Ocean Beach south of Sloat Boulevard, there is a high diversity and abundance of shorebirds, while the beach north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use. The presence of dogs, as well as their barking and running, in the designated VSCA would disturb shorebirds, gulls, and terns using the beach/dune habitat in the VSCA for roosting or feeding. When dogs and dog walkers are present in the VSCA, birds using the beach in the VSCA could flee from the VSCA to other areas where dogs are not allowed, such as the nearby SPPA, or they may flush and return and be repeatedly disturbed. Marine mammals stranding or hauling out on Ocean Beach in the VSCA proposed in alternative C could be subjected to disturbance from unleashed dogs, which could bite, bark at, or clamber over stranded or hauled-out animals. Therefore, alternative C would have long-term moderate adverse impacts on shorebirds, gulls, and terns as well as marine mammals using beach habitat in the VSCA.

The long-term moderate adverse impacts on wildlife in the VSCA would occur only on about a quarter of the entire beach. Shorebirds and marine mammals would be protected at the beach south of Sloat Boulevard where dogs are prohibited, but off-leash dogs could occasionally to frequently disturb shorebirds and marine mammals in the VSCA at this site. Therefore, the overall impact on wildlife at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard would be long term, minor to moderate, and adverse, assuming compliance. A range is included because impacts would depend on the seasonal presence of the birds and the level of activity at the site as well as the presence of marine mammals.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Ocean Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since commercial dog walking activity is not common at Ocean Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor to moderate adverse impacts on wildlife from dogs at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard under alternative C were considered together

with the effects of the projects mentioned above under alternative B for the Ocean Beach SPPA. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative C; however, the effects from the erosion control project on shorebird habitat would be adverse. These beneficial and adverse effects from projects at Ocean Beach may balance out when combined. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on wildlife at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard under this alternative would be expected to be long term, minor to moderate, and adverse.

OCEAN BEACH NORTH OF STAIRWELL 21 AND SOUTH OF SLOAT BOULEVARD ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Shorebirds and marine mammals would be protected at the beach south of Sloat Boulevard where dogs are prohibited, but the VSCA encompasses about a quarter of the beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; impacts would depend on the seasonal presence of the birds and the level of activity at the site	Beneficial to no change, assuming compliance	Long-term minor to moderate adverse cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be required north of Stairwell 21 and dogs would be prohibited south of Sloat Boulevard. Overall impacts would be the same as alternative B: long term, minor, and adverse.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. Under alternative D, the cumulative impacts on wildlife at Ocean Beach would be the same as those under alternative B: long-term, minor, and adverse.

OCEAN BEACH NORTH OF STAIRWELL 21 AND SOUTH OF SLOAT BOULEVARD ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; south of Sloat Boulevard has high shorebird use in a very narrow beach and north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use	Beneficial, assuming compliance	Long-term minor adverse cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would provide a VSCA on the beach north of Stairwell 21 and dogs would be allowed on leash south of Sloat Boulevard. The presence of dogs, as well as their barking and running, in the designated VSCA would disturb shorebirds, gulls, and terns using the beach/dune habitat for roosting or feeding. It is possible that shorebirds, gulls, and terns that roost or feed along the beach could be frequently disturbed by dogs in the VSCA through dogs chasing after and barking at them, which would result in the birds fleeing to other areas where dogs are not allowed or flushing and returning and being repeatedly disturbed. Indirect impacts on wildlife in the VSCA would also occur due to wildlife avoidance of the area during periods of activity or altogether. Marine mammals stranding on Ocean Beach in the VSCA would be subjected to disturbance from unleashed dogs, which could bite, bark at, or clamber over stranded animals. Therefore, in the VSCA at Ocean Beach, alternative E would result in long-term moderate adverse impacts on wildlife.

The long-term moderate adverse impacts on wildlife in the VSCA would occur in only a portion of the entire site. Physically restraining dogs on leash at the beach south of Sloat Boulevard would protect shorebirds and marine mammals, although on-leash dogs could still disturb shorebirds and wildlife. Therefore, assuming compliance, overall impacts on wildlife as a result of alternative E would be long term and would range from minor to moderate and adverse, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Ocean Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since commercial dog walking activity is not common at Ocean Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor to moderate adverse impacts on wildlife from dogs at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard under alternative E were considered together with the effects of the projects mentioned above under alternative B for the Ocean Beach SPPA. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative E; however, the effects on shorebird habitat from the erosion control project would be adverse. These beneficial and adverse effects from projects at Ocean

Beach may balance out when combined. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, minor to moderate, and adverse.

OCEAN BEACH NORTH OF STAIRWELL 21 AND SOUTH OF SLOAT BOULEVARD ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs on leash at the beach south of Sloat Boulevard would protect shorebirds and marine mammals, although on-leash dogs could still disturb shorebirds and wildlife; the VSCA encompasses only a portion of the beach habitat at the site; off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; impacts would depend on the seasonal presence of the birds and the level of activity at the site	Beneficial to no change, assuming compliance	Long-term minor to moderate adverse cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative C: a VSCA would be established on the beach north of Stairwell 21 and would prohibit dogs on the remaining beach, located south of Sloat Boulevard. At Ocean Beach south of Sloat Boulevard, there is a high diversity and abundance of shorebirds, while the beach north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use. The presence of dogs, as well as their barking and running, in the designated VSCA would disturb shorebirds, gulls, and terns using the beach/dune habitat in the VSCA for roosting or feeding. When dogs and dog walkers are present in the VSCA, birds using the beach in the VSCA could flee from the VSCA to other areas where dogs are not allowed, such as the nearby SPPA, or they may flush and return and be repeatedly disturbed. Marine mammals stranding or hauling out on Ocean Beach in the VSCA proposed in the preferred alternative could be subjected to disturbance from unleashed dogs, which could bite, bark at, or clamber over stranded animals. Therefore, the preferred alternative would have long-term moderate adverse impacts on shorebirds, gulls, and terns as well as marine mammals using beach habitat in the VSCA.

The long-term moderate adverse impacts on wildlife in the VSCA would occur only on about a quarter of the entire beach. Shorebirds and marine mammals would be protected at the beach south of Sloat Boulevard where dogs would be prohibited, but off-leash dogs could occasionally to frequently disturb shorebirds and marine mammals in the VSCA at this site. Therefore, the overall impact on wildlife at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard would be long term, minor to moderate, and adverse, assuming compliance. A range is included because impacts would depend on the seasonal presence of the birds and the level of activity at the site, as well as the presence of marine mammals.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Ocean Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since commercial dog walking activity is not common at Ocean Beach, it is likely that this alternative would not have an impact on the

number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

Projects planned in or near the coastal community that may affect shorebirds include the *Ocean Beach–Great Highway Erosion Control Project*, which is developing long-term solutions to beach and bluff erosion problems at Ocean Beach along Highway 1 (City and County of San Francisco 2008, 3, 7), but could have long-term adverse effects on shorebird habitat.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level. The *Ocean Beach Master Plan* includes plans to restore habitat at Ocean Beach, resulting in beneficial impacts on coastal community wildlife. These plans would not be great enough to offset other adverse cumulative projects at Ocean Beach.

The long-term minor to moderate adverse impacts on wildlife from dogs at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from the preferred alternative; however, the effects on shorebird habitat from the erosion control project would be adverse. These beneficial and adverse effects from projects at Ocean Beach may balance out when combined. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis

for this alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, minor to moderate, and adverse.

OCEAN BEACH NORTH OF STAIRWELL 21 AND SOUTH OF SLOAT BOULEVARD PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Shorebirds and marine mammals would be protected at the beach south of Sloat Boulevard, where dogs would be prohibited, but the VSCA encompasses about a quarter of the beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; impacts would depend on the seasonal presence of the birds and the level of activity at the site	Beneficial to no change, assuming compliance	Long-term minor to moderate adverse cumulative impacts

Fort Funston

Alternative A: No Action. Currently, dogs are allowed on the beach at Fort Funston under voice control. The beach at Fort Funston is a high visitor and dog use area, and is also used by high numbers of shorebirds, gulls, and terns. Beach Watch surveys indicate that the Thornton beach segment (which encompasses Fort Funston) shows high shorebird use (Beach Watch 2009), and park staff often observe large numbers of shorebirds when there are fewer dogs in this area of the site. A seasonal advisory (April 1 – August 15) notifying visitors of bank swallow nesting is placed within 50 feet of the cliff face at the north end of the beach. It is put in place annually to protect a colony of bank swallows nesting in the coastal bluffs. Some dogs have accessed the cliffs from the beach and from the dunes above, resulting in disturbance to the bank swallow colony (table 10); see "Special-status Species" section for more details. At Fort Funston, a total of 172 dog-related incidents were recorded from 2008 through 2011. The majority of incidents recorded were for having a dog off-leash (69 incidents) and for hazardous conditions; of the 72 hazardous conditions reported, 29 were for pet rescues on the cliffs at the site (table 26a).

Since voice control dog walking would continue to be allowed on the beach, dog presence as well as dogs chasing after, barking at, and coming in close proximity to migrating and wintering shorebirds, gulls, and terns roosting or feeding on the beach would continue under alternative A. This type of disturbance by dogs could result in energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. Birds using beach and coastal bluff habitat at Fort Funston would continue to be frequently and repeatedly disturbed by dogs because the site has high visitor and dog use. In addition to birds, marine mammals that haul out or strand at Fort Funston would occasionally be affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water.

Additionally, dog walking under voice control would be allowed on the Fort Funston upland vegetation through coastal dune vegetation north and south of the main parking lot. Other impacts on wildlife (besides shorebirds and waterbirds using beach habitat) as a result of dogs at this site would include disturbance, harassment, chasing after, and possible disease transmission; indirect impacts would include physical damage to habitat by dogs digging or trampling. Indirect impacts as a result of dogs include

affecting bird habitat and reducing its suitability for songbirds and California quail, which have historically used habitat at Fort Funston. Dogs and dog walkers have created a myriad of informal pathways through the vegetation, resulting in continued long-term moderate adverse impacts on wildlife through fragmentation of habitat and creation of open areas that could be barriers to the movement of smaller animals.

Overall, alternative A would result in continued long-term moderate to major adverse impacts on wildlife using beach and coastal dune habitat at Fort Funston because frequent and repeated disturbances to wildlife from dogs would continue to occur, potentially limiting wildlife's use of preferred habitat at the site and continuing to degrade this habitat.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking regularly occurs at Fort Funston. Commercial dog walking would continue to contribute to the long-term moderate to major adverse impacts on wildlife. Impacts would include repeated disturbances to wildlife from dogs and the degradation of habitat.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Projects in or near the coastal community that may affect shorebirds include the Vista Grande portion of Daly City's stormwater collection system, which routes storm flows to an outfall structure at the beach below Fort Funston (City of Daly City 2010b, 3). Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking occurs regularly at Fort Funston and dogs are allowed under voice and sight control throughout the site. Therefore, the interim compendium amendment would have a beneficial effect on coastal communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing trampling, digging, and dog waste.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife

such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term moderate to major adverse impacts on wildlife from dogs at Fort Funston under alternative A were considered together with the effects of the projects and the interim permitting program mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be long term, minor to moderate, and adverse.

FORT FUNSTON ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate to major adverse impacts	The seasonal advisory (formerly a closure) would continue to be ignored on the beach and dogs would continue to frequently disturb and/or harass shorebirds and potentially limit their use of preferred habitat and interrupt roosting or foraging behavior, which causes the expenditure of energy and could affect migration and breeding; shorebird numbers are high and visitor use is high at this site; marine mammals would continue to be occasionally subjected to impacts from dogs on the beach	N/A	Long-term minor to moderate adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed on the beach and trails that are not closed to dogs. Since the distribution of the draft plan/SEIS, the Battery Davis Trail has been closed to visitors by the NPS due to safety concerns from coastal erosion. Areas closed to dogs include a 12-acre habitat protection area that restricts both visitors and dogs to protect habitat for the California threatened bank swallows (*Riparia riparia*), enhance significant native plant communities, improve public safety and reduce human-induced impacts to the coastal bluffs and dunes, a significant geological feature (NPS 2000b); the bluff area that has a seasonal advisory (April 1 – August 15) for the protection of the bank swallow colony; and a section of trail closed for the prevention of erosion. At Fort Funston there are other existing habitat areas (currently not officially closed) where dogs and dog walkers have created social trails that would be closed since dogs would have to remain on designated upland trails or the beach. Dog walking under voice control would not be allowed under this alternative. As a result, on-leash dog walking would not allow dogs to roam freely along the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a

flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. On-leash dog walking, if occurring in proximity to wildlife, would cause birds roosting and/or feeding on the beach to flee to nearby areas of less activity, like the SPPA at Ocean Beach, or to relocate entirely; both actions would result in loss of preferred habitat and unnecessary energy expenditure by fleeing birds. Therefore, assuming compliance, overall impacts as a result of alternative B would be long term, minor, and adverse because shorebirds and waterbirds as well as marine mammals may occasionally be affected by on-leash dogs; upland wildlife such as birds and small mammals would also be disturbed by dogs. The level of disturbance would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Fort Funston, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on wildlife from dogs at the site. Overall impacts on wildlife from dogs walked by both commercial and private individuals are summarized above.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Projects in or near the coastal community that may affect shorebirds include the Vista Grande portion of Daly City's stormwater collection system, which routes storm flows to an outfall structure at the beach below Fort Funston (City of Daly City 2010b, 3). Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term minor adverse impacts on wildlife from dogs at Fort Funston under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the

restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

FORT FUNSTON ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; other wildlife such as birds and small mammals would also be affected by dogs; seasonal beach advisory in place during bank swallow nesting season	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C at Fort Funston would provide two VSCAs: one on the beach south of the Funston Beach Trail North to the southern boundary of the site and one in coastal dune habitat north of the main parking lot. On-leash dog walking would be allowed on all trails north of the parking lot (except the Sunset Trail from the parking lot to the junction with the Chip Trail, and the Funston Horse Trail, which would be closed to dogs and the Battery Davis Trail, which is closed to visitors due to erosion), and on the Funston Beach Trail South (sand ladder) and Sunset Trail south of the main parking lot. Dogs would be prohibited on the beach north of the Funston Beach Trail North. The beach VSCA is a high use area and is preferred habitat for shorebirds; the presence of dogs, as well as their barking and running, in the designated VSCA would disturb shorebirds, gulls, and terns using the beach/dune habitat in the VSCA for roosting or feeding. When dogs and dog walkers are present in the VSCA, birds using the beach in the VSCA could flee to other areas where dogs are not allowed, such as the northern portion of the beach or the SPPA at Ocean Beach, or they may flush and return and be repeatedly disturbed. Marine mammals stranding or hauling out on the beach at Fort Funston in the VSCA could be subjected to disturbance from unleashed dogs, which could bite, bark at, or clamber over the animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Existing wildlife and wildlife habitat in both of the designated VSCAs would be adversely affected by disturbance from dogs. Because of mobility, wildlife can usually avoid these areas during peak activity or habituate to these activities, but indirect impacts on wildlife in the VSCAs due to wildlife avoidance of the area during periods of activity or altogether would still affect wildlife. In addition, restoration at Fort Funston would be partially precluded by dogs in the VSCAs at the site. Therefore, alternative C would have long-term major adverse impacts on wildlife in the VSCAs at Fort Funston because these are high use areas for shorebirds and other wildlife, indicating the presence of preferred habitat despite the level of disturbance by dogs.

The long-term major adverse impacts on wildlife in the VSCAs would occur in only a portion of the entire site Shorebirds and marine mammals would be protected at the beach north of the Funston Beach Trail North, where dogs would be prohibited, but the beach VSCA encompasses about one-half of the beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site. Other wildlife, such as birds and small mammals, use the upland VSCA that supports coastal

habitat and would also be disturbed by dogs. Habitat restoration would be partially precluded by dogs at the site. Therefore, assuming compliance, the overall impact on wildlife at Fort Funston would be long term, moderate, and adverse due to frequent disturbances to wildlife as a result of dogs.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Fort Funston, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, moderate, and adverse.

Cumulative Impacts. The long-term moderate adverse impacts on wildlife from dogs at Fort Funston under alternative C were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

FORT FUNSTON ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term moderate adverse impacts, assuming compliance	Shorebirds and marine mammals would be protected at the beach north of the Funston Beach Trail North, where dogs would be prohibited, but the beach VSCA encompasses about one-half of the beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site as well as other wildlife in the upland VSCA; restoration would be precluded by dogs at the site	Beneficial to no change, assuming compliance	Long-term minor adverse cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D at Fort Funston would allow on-leash dog walking on the beach between the Funston Beach Trail North and the southern boundary of the site. Dogs would be prohibited north of the Funston Beach Trail North. Additionally, alternative D would provide a fenced VSCA in a previously disturbed area of coastal dune habitat north of the water fountain, but would otherwise restrict dogs to on leash on trails except for the Funston Horse Trail, where dogs would be prohibited, and the northern portion of the Sunset Trail, which is closed because of erosion. As a result, impacts on wildlife using coastal dune habitat would be limited and restored areas would be protected. The beach seasonal advisory would be in place during bank swallow nesting season, which would protect wildlife, and physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach. This may cause shorebirds, gulls, and terns using the beach habitat for roosting or feeding to relocate to portions of the beach where dogs are not allowed (the northern portion of the beach or the SPPA at Ocean Beach). It is assumed that shorebirds and other wildlife using the beach would not use habitat on the beach during periods of activity or may avoid the area completely or habituate to these activities, but loss of preferred habitat would still have an impact on wildlife. Because of mobility, wildlife can usually avoid areas where dogs are present during peak activity, or they may habituate to these activities, but indirect impacts in the VSCA due to wildlife avoidance of the area during periods of activity or altogether would still affect wildlife. Off-leash dogs could disturb and/or harass the birds and wildlife in the VSCA, causing them to flush and return repeatedly. Therefore, alternative D would have long-term moderate adverse impacts on wildlife in the VSCA at Fort Funston due to the frequent disturbance of wildlife by dogs.

The moderate adverse impacts on wildlife in the upland VSCA would occur only in a portion of the entire site. Physically restraining dogs on leash in areas beyond the VSCA would protect shorebirds and marine mammals on the beach as well as upland wildlife in the coastal dunes, although on-leash dogs could still disturb birds and other wildlife. Additionally, the beach seasonal advisory would be in place during bank swallow nesting season, which would protect other wildlife as well as bank swallows. Therefore, assuming compliance, the overall impact on wildlife at Fort Funston would be long term, minor, and adverse due to occasional disturbances to wildlife.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Fort Funston under alternative D were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

FORT FUNSTON ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds and other wildlife by their presence; other wildlife use the upland VSCA, which supports coastal habitat; on-leash areas make up a large portion of the site; beach seasonal advisory in place during bank swallow nesting season	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on all trails outside the upland VSCA except the Funston Horse Trail, which is closed to dogs, and the Battery Davis Trail as well as the northern end of the Sunset Trail, which are closed due to erosion. On-leash dog walking would be allowed on the beach north of the Funston Beach Trail North. Dog walking under voice and sight control would be allowed in two VSCAs. One VSCA would be on the beach south of the Funston Beach Trail North to the Fort Funston southern boundary. The second ("upland") VSCA would extend north from the main parking lot. This VSCA corridor would extend from just north of the new trail to be built along the northern edge of the parking lot to, and including, the Funston Beach Trail North. The VSCA corridor includes the Chip Trail and sections of the Sunset Trail, Funston Road, and Battery Davis Trail, all located north of the parking lot. The VSCA also extends into the disturbed area across from Funston Beach Trail North. The seasonal advisory (April 1 – August 15) on the beach that extends 50 feet out from the cliff face to protect the bank swallow colony nesting in the coastal bluffs would be in affect under alternative E.

For shorebirds, gulls, and terns resting and feeding on the beach, the presence of running, barking dogs in the beach VSCA would result in disturbance that could result in relocation. It is possible that shorebirds, gulls, and terns that roost or feed along the beach could be disturbed by dogs in the VSCA chasing after them and barking, which would result in the birds fleeing to other areas where dogs are not allowed or flushing and returning and being repeatedly disturbed. Even on-leash dog walking could disturb birds as a result of barking and lunging, which would force birds to relocate. Because of mobility, wildlife can usually avoid areas where dogs are present during peak activity or habituate to these activities, but loss of preferred habitat would still indirectly affect wildlife. Although a seasonal advisory prohibiting dogs would be in place, it is unlikely that shorebirds, gulls, and terns would relocate to the closed portion of the beach because it is located at the base of the cliffs, not at the waterline. For the remainder of the year, shorebirds, gulls, and terns that are present in the VSCA would be forced to relocate farther away since dogs on leash would still be allowed north of the Funston Beach Trail North. In addition, marine mammals on the beach at Fort Funston in the VSCA proposed in alternative E would continue to be subjected to disturbance from unleashed dogs, which can bite, bark at, or clamber over stranded or hauled-out animals. The presence of dogs in the large coastal dune VSCA corridor that would be established under this alternative would result in disturbance to wildlife as well as the continued fragmentation of coastal dune habitat. Existing wildlife and wildlife habitat in both of the designated VSCAs would continue to be disturbed. In addition, restoration at Fort Funston would be partially precluded by dogs in the VSCAs at the site. Because the beach VSCA is a high use area and is preferred habitat for shorebirds, marine mammals can be present in the beach VSCA, and other wildlife use the upland VSCA that supports coastal dune habitat, long-term major adverse impacts on wildlife would

occur in the VSCAs at Fort Funston as a result of alternative E because frequent and repeated disturbances to wildlife from dogs would occur, potentially limiting wildlife use of preferred habitat at the site and continuing to degrade this habitat.

The long-term major adverse impacts on wildlife in the VSCAs would occur in a relatively large portion of the site. Frequent disturbances to wildlife from dogs would occur, potentially limiting wildlife use of preferred habitat and continuing to degrade preferred habitat at the site. Wildlife would be required to move to other locations, resulting in impacts on wildlife due to habitat loss. In addition, restoration at Fort Funston would be partially precluded by dogs in the VSCAs at the site. Therefore, assuming compliance, alternative E would result in overall long-term moderate adverse impacts on wildlife at this site because dogs (both on leash and in VSCAs) would be allowed in a large area that bisects most of the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Fort Funston, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, moderate, and adverse.

Cumulative Impacts. The long-term moderate adverse impacts on wildlife from dogs at Fort Funston under alternative E were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

FORT FUNSTON ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term moderate adverse impacts, assuming compliance	Physically restraining dogs on leash at the beach north of the Funston Beach Trail North (with a seasonal advisory) would protect shorebirds and marine mammals, although on-leash dogs could still disturb shorebirds and wildlife; the beach VSCA encompasses about one-half of beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site as well as other wildlife in the upland VSCA; restoration would be precluded by dogs at the site	Beneficial to no change, assuming compliance	Long-term minor adverse cumulative impacts

Alternative F: Preferred Alternative. On-leash dog walking would be allowed on all trails north of the parking lot that are outside the VSCA, except for the Funston Horse Trail, which would be closed to dogs and the Battery Davis Trail and the northern end of the Sunset Trail, which are closed due to erosion. On-leash dog walking would also be allowed on the Funston Beach Trail South (sand ladder), the Sunset Trail south of the main parking lot, and a future planned trail adjacent to Great Highway in the northern portion of the site. Dog walking under voice and sight control would be allowed in two designated VSCAs, one on the beach south of the Funston Beach Trail North and a second ("upland" VSCA) north of the main parking lot. The "upland" VSCA would include the following areas: the Funston Trail, the disturbed area northeast of the Funston Trail, the Funston Beach Trail (North), the area east of (but not including) the Sunset Trail and north of the main parking lot, encompassing the Chip Trail and its eastern embankment, and the Battery Davis Trail (West). The beach VSCA is a high use area and is preferred habitat for shorebirds; the presence of dogs, as well as their barking and running, in the designated VSCA would disturb shorebirds, gulls, and terns using the beach/dune habitat in the VSCA for roosting or feeding. When dogs and dog walkers are present in the VSCA birds using the beach in the VSCA could flee to other areas where dogs are not allowed, such as the northern portion of the beach or the SPPA at Ocean Beach, or they may flush and return and be repeatedly disturbed. Marine mammals stranding or hauling out on the beach VSCA at Fort Funston could be subjected to disturbance from unleashed dogs, which could bite, bark at, or clamber over the animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Existing wildlife and wildlife habitat in both of the designated VSCAs would be adversely affected by disturbance from dogs. Because of mobility, wildlife can usually avoid areas where dogs are present during peak activity or habituate to these activities, but indirect impacts in the VSCAs due to wildlife avoidance of the areas during periods of activity or altogether would still affect wildlife. In addition, restoration at Fort Funston would be partially precluded by dogs in the VSCAs at the site. Therefore, the preferred alternative would have long-term major adverse impacts on wildlife because these are high use areas for shorebirds and other wildlife, indicating the presence of preferred habitat despite the level of disturbance by dogs.

The long-term major adverse impacts on wildlife in the VSCAs would occur only in a portion of the entire site. Shorebirds and marine mammals would be protected at the beach north of the Funston Beach Trail North, where dogs would be prohibited, but the beach VSCA encompasses about one-half of the beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach. Other wildlife, such as birds and small mammals, use the upland VSCA that supports coastal habitat and would also be disturbed by dogs. Habitat restoration would be precluded by dogs at the site. Therefore, assuming compliance, the overall impact on wildlife at Fort Funston would be long term, moderate, and adverse due to frequent disturbances to wildlife as a result of dogs.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Fort Funston, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, moderate, and adverse.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Projects in or near the coastal community that may affect shorebirds include the Vista Grande portion of Daly City's stormwater collection system, which routes storm flows to an outfall structure at the beach below Fort Funston (City of Daly City 2010b, 3). Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term moderate adverse impacts on wildlife from dogs at Fort Funston under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be long term, minor and adverse.

FORT FUNSTON PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term moderate adverse impacts, assuming compliance	Shorebirds and marine mammals would be protected at the beach north of the Funston Beach Trail North, where dogs would be prohibited, but the beach VSCA encompasses about one-half of beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site as well as other wildlife in the upland VSCA; restoration would be precluded by dogs at the site	Beneficial to no change, assuming compliance	Long-term minor adverse cumulative impacts

SAN MATEO SITES

Mori Point

Alternative A: No Action. Currently, access to the small beach area within the NPS boundary is allowed for on-leash dog walking. The site receives moderate use by people walking dogs, but the section of beach in Mori Point is very small. On-leash dog walking is also allowed on the trails at the site. Park staff have observed unleashed dogs at the site; off-leash violations totaled 146 from 2008 through 2011 (table 27a).

Under alternative A, shorebirds, gulls, and terns that may roost or feed on the beach would continue to be subjected to disturbance from barking, excited dogs, even though on leash, resulting in shorebirds fleeing from one location to another on the beach or leaving the area entirely. Additionally, marine mammals that haul out or strand at the beach would occasionally be affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water. On-leash dog walking at Mori Point would have continued long-term minor adverse impacts on wildlife along the beach within the NPS boundary because occasional disturbances from dogs would occur at this site.

Under alternative A, no permit system exists for dog walking. At Mori Point, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction

areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012b). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Shorebirds on beach would occasionally be subjected to impacts from on-leash dogs (and off-leash dogs violating the leash law) through dogs barking at, chasing after, and being in proximity to roosting or feeding birds; shorebird numbers are low, visitor use is moderate, and beach habitat area is small at this site	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Mori Coastal Trail and the beach (the portion owned by the NPS). On-leash dog walking would not allow dogs to roam freely along the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. On-leash dog walking, if occurring in proximity to wildlife, would cause birds roosting and/or feeding on the beach to flee to nearby areas of less activity or to relocate entirely; both actions would result in loss of preferred habitat and unnecessary energy expenditure by

fleeing birds. Therefore, assuming compliance, overall impacts on wildlife as a result of alternative B would be long term and would range from negligible to minor and adverse because shorebirds and waterbirds as well as marine mammals may not be affected or may occasionally be affected by on-leash dogs. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking on the beach within the NPS boundary, on the Mori Coastal Trail, and on Old Mori Trail and would result in the same impacts as alternative B: negligible to long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since commercial dog walking activity is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative C were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to

mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would prohibit dogs throughout Mori Point, including on the NPS-owned portion of beach. Shorebirds, gulls, and terns that may roost or feed on the beach would be protected from disturbance related to having dogs on the beach. As a result, no impacts on shorebirds, gulls, terns, or stranded marine mammals at Mori Point would occur.

Since dogs would be prohibited from Mori Point, there would be no impact from commercial dog walking on wildlife.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Mori Point under alternative D was considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at Mori Point	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Mori Coastal Trail, Old Mori Trail, the Pollywog Trail, and the beach within the NPS boundary and would result in the same impacts as alternative B, assuming compliance: negligible to long term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since commercial dog walking activity is not common at Mori Point, it is likely that this alternative would not

have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative E, allowing on-leash dog walking on the beach within the NPS boundary, on the Mori Coastal Trail, on Old Mori Trail, and on the Pollywog Trail. On-leash dog walking would not allow dogs to roam freely along the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. On-leash dog walking, if occurring in proximity to wildlife, would cause birds roosting and/or feeding on the beach to flee to nearby areas of less activity or to relocate entirely; both actions would result in loss of preferred habitat and unnecessary energy expenditure by fleeing birds. Therefore, assuming compliance, overall impacts on wildlife as a result of the preferred alternative would be long term and would range from negligible to minor and adverse because shorebirds and waterbirds as well as marine mammals may not be affected or may occasionally be affected by on-leash dogs. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since commercial dog walking activity is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay, and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2012). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007c, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009b, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the park stewardship programs should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MORI POINT PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

IMPACTS TO WILDLIFE IN COASTAL SCRUB, CHAPARRAL, AND GRASSLAND COMMUNITIES BY SITE AND ALTERNATIVE

Coastal scrub, bluff scrub, chaparral, and grassland plant communities are found to some extent at many of the GGNRA sites considered in this final plan/EIS, but at the more developed sites in San Francisco County only small remnants may remain (such as Crissy Field and Fort Point trail areas). As a result, only impacts on largely undeveloped park sites containing intact acreage of coastal scrub/chaparral/grassland are analyzed. These communities form a mosaic that provide habitat for many species of wildlife. Wildlife species that use these habitats and may be affected by dog management are discussed in detail in the sections below.

Sites currently have varying degrees of adverse impacts, as shown by levels of use and numbers of citations and incident reports related to dog activities (appendix G and table 10). A detailed literature review was conducted for this final plan/EIS to determine the impacts of dogs on wildlife species such as birds, small mammals, and deer, the results of which are summarized at the beginning of this chapter in the section titled "Summary of Background Information Used to Determine Impacts to Natural Resources." Unrestrained dogs, because of their innate abilities as hunters, could affect wildlife by disturbing birds (low- and ground-nesting birds would be affected the most), disturbing reptiles using roosting or sunning sites, chasing after fleeing birds and small mammals, and even on occasion capturing individuals. Dogs have a keen sense of smell and can identify burrows of reptiles (e.g., gopher snakes) and small mammals (mice, moles, voles, etc.), destroy the burrows by digging (when off leash), and capture animals living in the burrows. Dogs off leash and unrestrained by voice control could also encounter coyotes in the developed areas of GGNRA (San Francisco sites) and in some of the more undeveloped and expansive areas of GGNRA, such as at Alta Trail, Oakwood Valley, Marin Headlands Trails, and San Mateo sites. These undeveloped sites are frequented by coyotes, which are likely impacted by the continual presence of dogs. In addition, interactions between dogs and coyotes could result in injury and possibly transmission of disease to either species, as well as injury to visitors. Mountain lions are increasingly encountered in more suburban settings and it is possible that mountain lions could interact with humans and dogs at GGNRA sites that have appropriate habitat, although they are not likely to be present when human and dog activity is highest at these sites. As a result of such interaction, injury, death, or potential transfer of disease could occur. The NPS strives to provide a landscape that would benefit coyotes and mountain lions in GGNRA while minimizing the potential for encounters with dogs or humans. Because of the range and extent of these communities and the similarity of potential impacts on wildlife resulting from dog management, the discussion of impacts by alternative will be treated more specifically by site or groups of sites in the paragraphs that follow.

MARIN COUNTY SITES

Homestead Valley

Alternative A: No Action. Currently, dogs are allowed under voice control or on leash throughout the site. This site has low visitor use for dog walkers (table 10). The trails in this site are easily accessible from residential areas and Homestead Valley is adjacent to larger tracts of open land across Panoramic Highway.

Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or

coyotes and interact or exchange parasites/diseases. In addition, wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Homestead Valley because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Homestead Valley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Homestead Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Homestead Valley.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Homestead Valley is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal scrub, chaparral, and grassland plant community by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and dog waste.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute cumulatively to wildlife impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor to moderate adverse impacts on wildlife from dogs at Homestead Valley under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects and the interim permitting should reduce some of the adverse impacts on wildlife from alternative A. The adverse impacts resulting from construction projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

HOMESTEAD VALLEY ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/ burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Homestead Fire Road and on neighborhood connector trails (Homestead Trail and Homestead Summit Trail). Since dog walkers may walk along the edge of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the fire road or trails. Leash requirements would reduce the probability that a dog would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the entire site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, alternative B would result in overall long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result from dogs.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Homestead Valley. Additionally, the

implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Homestead Valley.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/ chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute cumulatively to wildlife impacts. Because the mission blue butterfly inhabits coastal scrub/ chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor adverse impacts on wildlife from dogs at Homestead Valley under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The adverse impacts resulting from construction projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

HOMESTEAD VALLEY ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and the impacts on wildlife would be the same: long term, minor to moderate, and adverse in the LOD area and long term, minor, and adverse overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Homestead Valley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since dog walking activity at Homestead Valley is low and commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site would be the same as those under alternative B: negligible.

HOMESTEAD VALLEY ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed only along Homestead Fire Road; dogs would be prohibited in other areas of the site, providing protection to coastal scrub/chaparral/grassland habitat and wildlife by limiting the number of trails accessible to dogs and by restricting that access to on-leash dog walking. The LOD area would include the fire road and the 6 feet of land adjacent to the edges of the road, as described in alternative B. The habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, alternative D would result in overall negligible to long-term minor adverse impacts on wildlife.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, there would be no impacts from commercial and permitted dog walking. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Homestead Valley under alternative D were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative D. The adverse impacts resulting from construction projects at or in the vicinity of GGNRA would add little to the cumulative impacts on

wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

HOMESTEAD VALLEY ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to all other alternatives; trails receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Homestead Valley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since dog walking activity at Homestead Valley is low and commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site would be the same those under alternative B: negligible.

HOMESTEAD VALLEY ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on Homestead Fire Road and on neighborhood connector trails (Homestead Trail, Homestead Summit Trail, and Eagle Trail). Since dog walkers may walk along the edge of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the fire road or trails. Leash requirements would reduce the probability that a dog would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the preferred alternative would result in overall long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result from dogs.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Homestead Valley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since dog walking activity at Homestead Valley is low and commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for

vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Homestead Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Homestead Valley.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/ chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute cumulatively to wildlife impacts. Because the mission blue butterfly inhabits coastal scrub/ chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor adverse impacts on wildlife from dogs at Homestead Valley under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The adverse impacts resulting from construction projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

HOMESTEAD VALLEY PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alta Trail/Orchard Fire Road/Pacheco Fire Road

Alternative A: No Action. Currently, dogs are allowed under voice control or on leash on the trails and roads from Marin City to Oakwood Valley. These areas experience high use by commercial dog walkers (table 10), with typically 5 to 12 dogs under voice control per commercial walker, and the trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. There are large tracts of habitat in the Alta Trail/Orchard Fire Road/Pacheco Fire Road that extend north into Muir Beach.

Under the no-action alternative, access to wildlife habitat off trails and fire roads would continue. Disturbance from dogs could include physical damage to habitat from digging or trampling, as well as dogs chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Nests of ground-nesting birds could be trampled, thus eliminating the opportunity for successful reproduction. Ground-dwelling and ground-nesting bird species such as California quail, which uses the scrub/chaparral/grassland habitat, are in decline. Birds foraging in the coastal scrub/chaparral/grassland mosaic can be flushed and forced into flight; relocating to another area uses valuable energy reserves or results in an unprotected nest, providing opportunity for predators. Time and energy that would otherwise be spent feeding (including feeding young) or protecting nests becomes lost when these birds are disturbed or chased by dogs. Small rodents and mammals may also be chased and/or captured by dogs; burrows of these animals may be crushed or dug up by dogs. Dogs also have the potential to encounter larger mammals such as deer or coyotes. Deer could be chased by dogs, resulting in loss of energy reserves and the dispersal of family units. This site is frequented by coyotes, which are likely impacted by the continual presence of dogs. In addition, interactions between dogs and coyotes could lead to altercations and even the exchange of parasites and disease because of the genetic similarities, as previously discussed. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at this park site because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road is common, with commercial dog walkers having 5 to 12 dogs under voice control at one time. Commercial dog walking would continue to create long-term minor to moderate adverse impacts on wildlife. Dogs under voice control would continue to disturb wildlife in the area.

Cumulative Impacts. Projects and actions in and near Alta Trail and Orchard and Pacheco fire roads were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect coastal scrub at GGNRA park sites such as Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road is common, often with 5 to 12 dogs per dog walker. Therefore, the interim compendium amendment would have a beneficial effect on coastal scrub, chaparral, and grassland plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage, digging, and dog waste.

Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Local and statewide declines have been observed in several birds that breed in coastal scrub, most notably the California gnatcatcher, which is a federally threatened species endemic to Southern California, as well as common species such as the white-crowned sparrow (USDA 2005a, 613). Any

impacts on scrub/chaparral/grassland habitats, whether beneficial or adverse, will also indirectly affect wildlife species that use these habitats. The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts, such as the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (NPS 2009c, ix, 82), which primarily provides mitigation for impacts on the mission blue butterfly. Therefore, these projects would not likely contribute adversely to the cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type (e.g., various species of butterflies, small mammals, predators, reptiles, and bird species as described in chapter 3). Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005b), the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), and the Southern Marin Headlands project, which focused on enhancing the Coastal Trail corridor in the southern Marin Headlands (GGNPC n.d.).

The long-term minor to moderate adverse impacts on wildlife from dogs at Alta Trail and Orchard and Pacheco fire roads under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. The adverse impacts resulting from construction and transportation projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/ burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and receive heavy use by visitors	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Alta Trail to Orchard Fire Road, on Orchard Fire Road, and on Pacheco Fire Road. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from

high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts that would occur in the LOD area would encompass a reduced portion of the site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, alternative B would result in overall long-term minor adverse impacts on wildlife because occasional disturbance to wildlife from dogs would result.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on wildlife from dogs at the site. Overall impacts on wildlife from dogs walked by both commercial and private individuals are summarized below.

Cumulative Impacts. Projects and actions in and near Alta Trail and Orchard and Pacheco fire roads were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect coastal scrub at GGNRA park sites such as Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Local and statewide declines have been observed in several birds that breed in coastal scrub, most notably the California gnatcatcher, which is a federally threatened species endemic to Southern California, as well as common species such as the white-crowned sparrow (USDA 2005a, 613). Any impacts on scrub/chaparral/grassland habitats, whether beneficial or adverse, will also indirectly affect wildlife species that use these habitats. The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts, such as the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (NPS 2009c, ix, 82), which primarily provides mitigation for impacts on the mission blue butterfly. Therefore, these projects would not likely contribute adversely to the cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type (e.g., various species of butterflies, small mammals, predators, reptiles, and bird species as described in chapter 3). Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005b), the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), and the Southern Marin Headlands project, which focused on enhancing the Coastal Trail corridor in the southern Marin Headlands (GGNPC n.d.).

The long-term minor adverse impacts on wildlife from dogs at Alta Trail and Pacheco and Orchard fire roads under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The adverse impacts resulting from construction and transportation projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are only a portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and long term, minor, and adverse overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Alta Trail, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Impacts on wildlife from permit holders with up six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to overall impacts from other dog walkers, as summarized above; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site would be the same those under alternative B: negligible.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impact on wildlife from dogs would occur at this site.

No dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Alta Trail and Orchard and Pacheco fire roads under alternative D was considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the restoration and trail rehabilitation projects combined with the negligible impacts from construction and transportation projects and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Alta Trail to the junction with the Morning Sun Trail, and on Orchard and Pacheco fire roads. While the mileage open to dog walking would be greater than that described for alternative B, the impacts would be similar, assuming compliance: long term, minor to moderate, and adverse in the LOD area and long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Alta Trail, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at this site, but permit holders would be restricted to the section of Alta Trail between Donahue Street and the junction with Orchard Fire Road. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase

enough to cause a change in the threshold level, especially with the restriction to a limited portion of the Alta Trail. Since commercial dog walking is common at the site, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to overall impacts from other dog walkers; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Alta Trail and Pacheco and Orchard fire roads under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative E. The adverse impacts resulting from construction and transportation projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative E, allowing on-leash dog walking on Alta Trail from Donahue Street to the junction with the Morning Sun Trail and on Orchard and Pacheco fire roads. The LOD would include all areas adjacent to the edges of the trail/roads up to 6 feet. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. This site is frequented by coyotes, which would likely continue to be impacted by the presence of dogs.

The long-term minor to moderate adverse impacts that would occur in the LOD area would encompass a reduced portion of the site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high

quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the preferred alternative would result in long-term minor adverse impacts on wildlife because occasional disturbance to wildlife from dogs would result.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Alta Trail, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed for Alta Trail from Donahue Street to the intersection with Orchard Trail. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level, especially with the restriction to a limited portion of Alta Trail. Since commercial dog walking is common on Alta Trail/Orchard Fire Road/Pacheco Fire Road**,** impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to overall impacts from other dog walkers, as summarized above; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. Projects and actions in and near Alta Trail and Orchard and Pacheco fire roads were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect coastal scrub at GGNRA park sites such as Alta Trail and Orchard and Pacheco fire roads. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Local and statewide declines have been observed in several birds that breed in coastal scrub, most notably the California gnatcatcher, which is a federally threatened species endemic to Southern California, as well as common species such as the white-crowned sparrow (USDA 2005a, 613). Any impacts on scrub/chaparral/grassland habitats, whether beneficial or adverse, will also indirectly affect wildlife species that use these habitats. The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts, such as the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, which primarily provides mitigation for impacts on the mission blue butterfly. Therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/ grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type (e.g., various species of butterflies, small mammals, predators, reptiles, and bird species as described in chapter 3). Such projects include the following: mitigation for the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (NPS 2009c, ix, 82), proposed fire management policies of the *Fire Management Plan* (NPS 2005b), the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), and the Southern Marin Headlands project, which focused on enhancing the Coastal Trail corridor in the southern Marin Headlands (GGNPC n.d.)

The long-term minor adverse impacts on wildlife from dogs at Alta Trail and Pacheco and Orchard fire roads under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of

the adverse impacts on wildlife from the preferred alternative. The adverse impacts resulting from construction and transportation projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are only a portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Oakwood Valley

Alternative A: No Action. Currently, dogs are allowed under voice control on Oakwood Valley Fire Road and the Oakwood Valley Trail from the junction with the fire road to the junction with Alta Trail, and on leash on the Oakwood Valley Trail from the trailhead to the junction with the Oakwood Valley Fire Road. These areas experience moderate use by hikers, runners, bicyclists, and horseback riders and moderate use by dog walkers (table 10). The trails in this site are easily accessible from residential areas and this site has sensitive coastal scrub habitat. Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and impacts would be similar to those described in detail above at Alta Trail/Orchard Fire Road/Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs would also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. This site is frequented by coyotes, which are likely impacted by the continual presence of dogs. In addition, wildlife may be displaced from high-quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Oakwood Valley because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Oakwood Valley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term

parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Oakwood Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Oakwood Valley.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Oakwood Valley is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal scrub, chaparral, and grassland plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and dog waste.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/ grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor to moderate adverse impacts on wildlife from dogs at Oakwood Valley under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

OAKWOOD VALLEY ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/ burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and receive heavy use by visitors	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed and would be limited to the Oakwood Valley Fire Road and Oakwood Valley Trail to their intersection. No dogs would be allowed above the junction of the fire road and trail. The LOD area would include 6 feet in each direction from the edges of the trail/road. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. The long-term minor to moderate adverse impacts that would occur in the LOD area represent only a small portion of the entire site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, alternative B would result in overall long-term minor adverse impacts on wildlife because occasional disturbance on wildlife would result from dogs.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Oakwood Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Oakwood Valley.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/ grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

OAKWOOD VALLEY ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. For alternative C, a VSCA is proposed on Oakwood Valley Fire Road to the junction with the Oakwood Valley Trail. The VSCA would include double gates at both ends (to separate this use from other users of the site) and continuous fencing to protect sensitive habitat. On-leash dog walking is proposed on Oakwood Valley Trail from the junction with the Oakwood Valley Fire Road to a new gate at the junction with Alta Trail. The VSCA would be located in a native hardwood forest and Douglas-fir/coast redwood community, and impacts in the VSCA are discussed in more detail in that section of the draft plan/SEIS. Impacts on wildlife in the LOD area along the Oakwood Valley Trail would be long term, minor to moderate, and adverse. Impacts would result from disruption of wildlife habitat through trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the overall impact on wildlife at Oakwood Valley would be long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative C were considered together with the effects of the projects mentioned above under

alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

OAKWOOD VALLEY ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed only along the Oakwood Valley Fire Road and Oakwood Valley Trail from Tennessee Valley Road to the junction of the fire road and the trail The LOD area would include the fire road and trail and the 6 feet of land adjacent to the edges of the road. Impacts on wildlife in the 6-foot LOD area would be long term, minor to moderate, and adverse. Impacts would result from the habitat in the LOD area being affected by dogs through trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, fewer trails would be available to on-leash dogs compared to all other alternatives, and this site generally receives heavy use by visitors. Therefore, assuming compliance, alternative D would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result from dogs.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative D were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

OAKWOOD VALLEY ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to all other alternatives; trails receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on leash dog walking in the same areas as alternative C. The VSCA would have double gates at both ends (to separate this use from other visitors to the site), but unlike alternative C, would have non-continuous fencing only where needed to protect sensitive habitat. Impacts from alternative E would be the same as alternative C, assuming compliance: long term, minor to moderate, and adverse in the LOD area and long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site would be the same those under alternative C: negligible.

OAKWOOD VALLEY ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; the LOD area and VSCA are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on Oakwood Valley Fire Road and on Oakwood Valley Trail from the junction with the fire road to the junction with Alta Trail. On-leash dog walking would also be allowed on the short segment of the Rhubarb Trail, which allows visitors from the Tennessee Valley Road community to access to the Oakwood Valley Fire Road without having to drive there. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high-quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. This site is frequented by coyotes, which would likely continue to be impacted by the presence of dogs.

The long-term minor to moderate adverse impacts that would occur in the LOD are representative of impacts from only a small portion of the entire site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking thereby becoming displaced from high quality habitat due to the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the preferred alternative would result in overall long-term minor adverse impacts on wildlife because occasional disturbance of wildlife would result from dogs.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term

parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Oakwood Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Oakwood Valley.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

OAKWOOD VALLEY PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Marin Headlands Trails

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed along the Coastal Trail from Hill 88 to Muir Beach, the Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, and Marin Drive. Dog walking under voice control (or on leash) is allowed on the Coastal Trail from the Golden Gate Bridge to Hill 88, including the Lagoon Loop Trail; the Coastal, Wolf Ridge, and Miwok Trail Loop; and the Old Bunker Fire Road Loop (includes a section of the Coastal Trail). These trails experience low to moderate use by dog walkers. In general, in the larger

tracts such as the Marin Headlands Trails, more dog walkers and their dogs would be concentrated at the trailheads and the ability of dog walkers to disperse provides a dilution that would actually spread impacts to a greater area or throughout the site. There are large tracts of coastal scrub habitat in Marin Headlands Trails that extend north into Muir Beach.

Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and impacts would be similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. This site is frequented by coyotes, which are likely impacted by the continual presence of dogs. In addition, wildlife may be displaced from high-quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Marin Headlands Trails, because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Marin Headlands Trails, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Marin Headlands Trails. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Marin Headlands Trails.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Marin Headlands Trails is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal scrub, chaparral, and grassland plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and nutrient addition from dog waste.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor to moderate adverse impacts on wildlife from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or

construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/ burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and receive heavy use by visitors	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would be the most protective of the coastal scrub/ chaparral habitat by prohibiting dogs throughout the Marin Headlands Trails site. Coastal scrub/chaparral/ grassland habitat, including habitat adjacent to trails and roads in the headlands, would be protected from impacts from dogs. Assuming compliance, alternative B would result in no impact on wildlife at the Marin Headlands Trails site.

Since dogs would be prohibited from the Marin Headlands Trails there would be no impact on wildlife from commercial dog walking.

Cumulative Impacts. Projects and actions in and near Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Marin Headlands Trails. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Marin Headlands Trails.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/ chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The lack of impacts on wildlife under alternative B was considered together with the effects of the projects mentioned above "Cumulative Impacts." The beneficial effects from trail rehabilitation projects combined with the negligible impacts of development or construction actions and the lack of impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impacts, assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor. This corridor extends from the Rodeo Beach parking lot to the intersection of Bunker and McCullough roads via the North Lagoon Loop Trail, North Miwok Trail, and Rodeo Valley Trail and includes the connector trails from the Rodeo Valley Trail to Smith Road Trailhead. On-leash dog walking would also be allowed on the Old Bunker Fire Road Loop, (including a section of the Coastal Trail), and the Batteries Loop Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. The LOD area would include 6 feet in each direction from the edges of the trail. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the overall impact on wildlife from on-leash dog walking would be long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under alternative C, permits would not be issued at Marin Headlands Trails allowing dog walkers to have more than three dogs. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at the Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce

the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B (dogs would be prohibited on the trails); therefore, assuming compliance, no impact on wildlife would occur as a result of alternative D.

No dog walking would be allowed under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife.

Cumulative Impacts. Under alternative D, the cumulative impacts on wildlife in the Marin Headlands Trails would be the same as those under alternative B: negligible.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Conzelman Coastal Trail from Highway 101 to the McCullough intersection and then to the Coastal Trail Bike Route, including the fire road, to the Rodeo Beach parking lot. On-leash dog walking would be available on the Old Bunker Fire Road Loop (which includes a section of the Coastal Trail), Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, Marin Drive, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. The LOD area would include 6 feet in each direction from the edges of the trails. Impacts on wildlife in the LOD area would be long term, moderate, and adverse due to trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present

during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

Under alternative E at the Marin Headlands Trails, on-leash dog trails and the LOD area are a greater portion of the entire site compared to alternatives B, C, and D. Trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, alternative E would result in overall long-term minor to moderate adverse impacts on wildlife because occasional to frequent disturbance to wildlife would result.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under alternative E, permits would not be issued at Marin Headlands Trails allowing dog walkers to have more than three dogs. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor to moderate adverse impacts on wildlife from dogs at the Marin Headlands Trails under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; on-leash dog trails and the LOD area are a greater portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	No change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, which extends from the Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via the North Lagoon Loop Trail, Miwok Trail, Rodeo

Valley Trail, and includes the connector trail from Rodeo Valley Trail to Smith Road Trailhead. On-leash dog walking would also be available on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), Batteries Loop Trail, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. The LOD area would include 6 feet in each direction from the edges of the trails. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. This site is frequented by coyotes, which would likely continue to be impacted by the presence of dogs.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the overall impact on wildlife from on-leash dog walking would be long term, minor, and adverse.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under the preferred alternative, permits would be issued allowing dog walkers to have more than three dogs on a short segment of the North Lagoon Loop Trail. Allowing dog walkers with more than three dogs on the North Lagoon Loop Trail from the Rodeo Beach parking lot to the pedestrian bridge creates a loop with the permitted areas allowed under the preferred alternative for Rodeo Beach. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as the Marin Headlands Trails. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Marin Headlands Trails.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor adverse impacts on wildlife from dogs at the Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. The

beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Fort Baker

Alternative A: No Action. Alternative A allows dogs on leash throughout Fort Baker, except that dogs are not allowed on the Chapel Trail or the pier. This site experiences moderate visitor use and low dog walking use. Documented leash law violations at this site totaled 52 from 2008 through 2011 and an additional 29 from 2012 to 2016 (tables 18a and 18b). Dogs have been observed by park staff off leash at the Parade Ground, Drown Fire Road, Battery Yates Trail, and behind the Bay Area Discovery Museum.

Under the no-action alternative at this site, on-leash dogs would have access to areas adjacent to the trails/fire roads, and off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; impacts would be similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may be displaced from high-quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Fort Baker, because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Fort Baker, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Fort Baker. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Fort Baker.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Fort Baker is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal scrub, chaparral, and grassland plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and dog waste.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor to moderate adverse impacts on wildlife from dogs at Fort Baker under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

FORT BAKER ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and receive heavy use by visitors	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Drown Fire Road, the Bay Trail (not including Battery Yates Trail), Vista Point Trail (to be built), the Lodge/Conference Center Grounds, and the Parade Ground. Dogs would not be allowed on the Battery Yates Trail as part of this alternative due to the presence of mission blue butterfly habitat. The LOD area would include 6 feet in each direction from the edges of the trail/fire road/grounds. Leash requirements would reduce the probability that a dog would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the overall impact on wildlife at Fort Baker would be long term, minor, and adverse because occasional disturbance to wildlife would result.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Fort Baker. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Fort Baker.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor adverse impacts on wildlife from dogs at Fort Baker under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

FORT BAKER ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking on Drown Fire Road, the Bay Trail including Battery Yates Trail, the Vista Point Trail (to be built), the Lodge/Conference Center Grounds, and the Parade Ground. The LOD area would include 6 feet in each direction from the edges of the trail/fire road/grounds. Leash requirements would reduce the probability that a dog would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. Therefore, assuming compliance, the overall impact on wildlife at Fort Baker would be long term, minor, and adverse because occasional disturbance to wildlife would result.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Fort Baker (excluding Drown Fire Road), any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Fort Baker under alternative C were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

FORT BAKER ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the lodge and conference grounds, the Vista Point Trail (to be built), and on the Bay Trail (excluding the Battery Yates Trail). Impacts on wildlife caused by dogs in the areas adjacent to the trail (LOD area) would be long term, minor to moderate, and adverse due to trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, fewer trails would be available to on-leash dogs compared to all other alternatives, and this site generally receives heavy use by visitors. Therefore, assuming compliance, alternative D would result in negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result from dogs.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Fort Baker under alternative D were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

FORT BAKER ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to all other alternatives; trails generally receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Fort Baker (excluding Drown Fire Road), any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife**.**

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site would be the same those under alternative C: negligible.

FORT BAKER ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Bay Trail, the Lodge/Conference Center Grounds, the Parade Ground, Fort Baker Trail between Sommerville Road and East Road, and the parking lots at the Bay Area Discovery Museum and connecting trails. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the overall impact on wildlife at Fort Baker would be long term, minor, and adverse because occasional disturbance to wildlife would result.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Fort Baker (excluding Drown Fire Road), any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Walking four to six dogs with an NPS-issued permit would be allowed in all of the same areas except the lands and trails surrounding the Cavallo Point Lodge. Permits could further restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Fort Baker. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Fort Baker.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/ chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor adverse impacts on wildlife from dogs at Fort Baker under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

FORT BAKER PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts

SAN FRANCISCO COUNTY SITES

Baker Beach and Bluffs to Golden Gate Bridge

Alternative A: No Action. Currently, dogs are allowed under voice control on the beach north of the draft plan/SEIS boundary, with on-leash dog walking required for trails leading to the beach; however, social trails exist at the site and traverse sensitive coastal scrub habitat. This site has documented low to moderate visitor use (varies due to weather, holidays, and weekend use) and dog walking use is also considered low to moderate (table 10).

Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and impacts would be similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Baker Beach and Bluffs to Golden Gate Bridge because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Baker Beach and Bluffs to Golden Gate Bridge, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate Bridge. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Baker Beach and Bluffs to Golden Gate Bridge.

The PTMP was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). Management objectives in the PTMP that are applicable to wildlife include identifying and protecting sensitive wildlife species, and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forests are being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on wildlife at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Baker Beach and Bluffs to Golden Gate Bridge is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal scrub, chaparral, and grassland

plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and dog waste.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/ chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor to moderate adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects, the interim permitting program and the PTMP should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and receive heavy use by visitors	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on all trails all the way to the Golden Gate Bridge in the vicinity of Baker Beach except the Batteries to Bluffs trail and trails leading to the Batteries to Bluffs trail, as well as on the beach north of the north parking lot. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these

activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would affect only a portion of the site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Assuming compliance, alternative B would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Baker Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate Bridge. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Baker Beach and Bluffs to Golden Gate Bridge.

The PTMP was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). Management objectives in the PTMP that are applicable to wildlife include identifying and protecting sensitive wildlife species, and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forests are being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on wildlife at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the PTMP should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on

wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and negligible to long term, minor, and adverse overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Baker Beach, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park would be the same as those under alternative B: negligible.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking on the section of Baker Beach south of the north parking lot and on all trails leading to that section of beach, as well as the Coastal Trail. Dogs would be prohibited on the section of beach north of the north parking lot, approximately half of the beach, and the trails leading to the northern section of the beach. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Impacts on wildlife from dogs in areas adjacent to the trail (LOD area) would be long term, minor to moderate, and adverse, due to trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, the overall impacts on wildlife at Baker Beach and Bluffs to Golden Gate Bridge would be negligible to long term, minor, and adverse.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative D were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects and the PTMP should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on all trails in the vicinity of Baker Beach except the Batteries to Bluffs Trail and trails leading to the Batteries to Bluffs Trail, as well as on the northern portion of the beach. A VSCA would be established on the southern portion of the beach, south of the north parking lot. In general, impacts would be limited to the existing trails, and the 6-foot corridors immediately adjacent to the trails (LOD area). Impacts on wildlife in the LOD area from dogs would be long term, minor, and adverse due to trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. The VSCA at Baker Beach and Bluffs to Golden Gate Bridge does not contain coastal scrub habitat; therefore, dog activity in the VSCA would not create any impacts on coastal scrub wildlife.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole, and the beach VSCA is not in coastal scrub habitat. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, the overall impacts on wildlife at Baker Beach and Bluffs to Golden Gate Bridge would be negligible to long term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Baker Beach, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on wildlife from permit holders with six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects

and the PTMP should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; beach VSCA is not in coastal scrub habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the section of Baker Beach north of Baker Beach Access Trail #2 and on the beach access trails leading to that section of beach, as well as on the Coastal Trail. Dogs would be prohibited in the section of beach south of the north parking lot (approximately half of the beach) and on the trails leading to the southern section of the beach, and on the Dune, Batteries to Bluffs, and Battery Crosby trails. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Impacts on wildlife caused by dogs in areas adjacent to the trail (LOD area) would be long term, minor to moderate, and adverse, due to trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, the overall impacts on wildlife at Baker Beach and Bluffs to Golden Gate Bridge would be negligible to long term, minor, and adverse.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. At Baker Beach, walking four to six dogs with an NPS-issued permit would be limited to the north parking lot, Baker Beach Access Trail #2, and the beach north of the trail. Permits could further restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level.

Since commercial dog walking is not common at Baker Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate Bridge. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Baker Beach and Bluffs to Golden Gate Bridge. As stated previously, the PTMP identifies and protects sensitive wildlife species, and restoring and maintaining their habitats. The PTMP preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forests are being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on wildlife at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/ chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the PTMP should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Lands End

Alternative A: No Action. Currently, dogs are allowed under voice control at the Lands End Site, which includes the Lands End Coastal Trail and the El Camino del Mar Trail. This site has low to moderate visitor use, low to moderate use by dog walkers (table 10), and a total of 10 dog-related incidents were recorded from 2008 through 2011(table 23a). Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and impacts would be similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Lands End because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Lands End, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Lands End. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Lands End.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Lands End is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coastal scrub, chaparral, and grassland plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and dog waste.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor to moderate adverse impacts on wildlife from dogs at Lands End under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts.

Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

LANDS END ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/ burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and receive heavy use by visitors	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the El Camino del Mar Trail, Lands End Coastal Trail, and connecting steps. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impact on wildlife along the land adjacent to the trails would occur in a relatively small area when compared to the site as a whole, which receives low to moderate use by dog walkers. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site receive low to moderate use by dog walkers. Therefore, assuming compliance, alternative B would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking in this site is uncommon, it is likely that commercial dog walking would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect

coastal scrub at GGNRA park sites such as Lands End. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Lands End.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/ chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The negligible to long-term minor adverse impacts on wildlife from dogs at Lands End under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

LANDS END ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, allowing on-leash dog walking on the El Camino del Mar Trail, the Lands End Coastal Trail, including on the steps to the El Camino del Mar Trail, and in the parking areas and on connecting trails. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Impacts on wildlife would be long term, minor to moderate, and adverse in the LOD area. Impacts would result from disruption of wildlife habitat through trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The minor to moderate adverse impacts in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well

as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site receive low to moderate use by dog walkers. Therefore, assuming compliance, alternative C would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Lands End is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Lands End, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Lands End under alternative C were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

LANDS END ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking on the El Camino del Mar Trail and on the Lands End Coastal Trail from Merrie Way parking lot to the junction with, and on the connector trail/steps leading to, the El Camino del Mar Trail. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Impacts from dogs in areas adjacent to the trail (LOD area) would be long term, minor to moderate, and adverse, due to trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The minor to moderate adverse impacts on wildlife adjacent to the trails in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, Lands End receives low to moderate use by dog walkers. Therefore, assuming compliance, the overall impact on wildlife at Lands End would be negligible to long term, minor, and adverse.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Lands End under alternative D were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

LANDS END ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and negligible to long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Lands End is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Lands End, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site would be the same those under alternative C: negligible.

LANDS END ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative B. The preferred alternative would allow on-leash dog walking at on the El Camino del Mar Trail, Lands End Coastal Trail, and the connecting steps. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts on wildlife along the land adjacent to the trails would occur in a relatively small area when compared to the site as a whole, which receives low to moderate use by dog walkers. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the preferred alternative would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result.

Lands End is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Lands End, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Lands End, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and

wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Lands End. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Lands End.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The negligible to long-term minor adverse impacts on wildlife from dogs at Lands End under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

LANDS END PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

SAN MATEO COUNTY SITES

Mori Point

Alternative A: No Action. On-leash dog walking is currently allowed on all trails and the portion of the beach owned by the NPS. Although current GGNRA regulations require dogs to be leashed at Mori Point, unleashed dogs are often observed at the site. This site has moderate to high visitor use by dog walkers, as well as visitors that frequent the area for activities such as walking, running, and biking. Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and impacts would be similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small

mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Some of the trails at this site are long, with excellent coastal scrub habitat directly adjacent to the trails, so there could be an avoidance of these trail corridors by birds and mammals that would actually cover more than small, localized areas. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Mori Point because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Mori Point, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Mori Point. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Mori Point.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat (even though this butterfly is not present at Mori Point currently) would also benefit wildlife species that inhabit this community type (i.e., various species of butterflies, small mammals, predators, reptiles, and bird species as described in chapter 3). Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005b); the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984); and the *Mori Point Restoration and Trail Plan* (NPS 2010e).

The long-term minor to moderate adverse impacts on wildlife from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site generally receive low to moderate use	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would also allow on-leash dog walking on the Mori Coastal Trail and the beach (the portion owned by the NPS), but dogs would not be allowed on other trails or on Old Mori Trail. In general, impacts would be limited to the existing trails, the beach, and the 6-foot corridors immediately adjacent to the trails (LOD area). Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical constraint. Impacts on wildlife in the LOD area would be long term, minor to moderate, and adverse since dogs would be able to disrupt wildlife habitat through trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, alternative B would have fewer trails available to on-leash dogs compared to alternative A, and the trails generally receive low to moderate use. Therefore, assuming compliance, alternative B would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for

impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking on Old Mori Trail, the Mori Coastal Trail, and the portion of beach owned by the NPS. In general, impacts would be limited to the existing trails, the beach, and the 6-foot corridors immediately adjacent to the trails (LOD area). Impacts on wildlife in the LOD area would be long term, minor to moderate, and adverse. Impacts would result from disruption of wildlife habitat through trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, there would be fewer trails available to on-leash dogs compared to alternative A and one more trail (Old Mori Trail) compared to alternative B. The trails at this site generally receive moderate use by dog walkers. Therefore, assuming compliance, the overall impact on wildlife at Mori Point would be negligible to long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative C were considered together with the effects of the projects mentioned above in

alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impacts on wildlife from dogs would occur at this site.

No dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Mori Point under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the trail rehabilitation projects combined with the negligible impacts from any development or construction actions and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails and beach as alternative B, with the addition of Old Mori Trail and the Pollywog Trail. In general, impacts would be limited to the existing trails, the beach, and the 6-

foot corridors immediately adjacent to the trails (LOD area). Impacts from dog walking in the LOD area would be long term, minor to moderate, and adverse, due to trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

Under this alternative, the trails that would allow on-leash dogs and the LOD area are a greater portion of the entire site compared to alternatives B, C, and D. In addition, the trails generally receive moderate use by dog walkers. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which would indirectly affect wildlife. Therefore, assuming compliance, the overall impact on wildlife at Mori Point would be long term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Mori Coastal Trail, Old Mori Trail, Pollywog Trail, Mori Headlands Trail, and the portion of beach owned by the NPS. In general, impacts would be limited to the existing trails, the beach, and the 6-foot

corridors immediately adjacent to the trails (LOD area). Impacts on wildlife in the LOD area would be long term, minor to moderate, and adverse. Impacts would result from disruption of wildlife habitat through trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, there would be fewer trails available to on-leash dogs compared to alternative A and two more trails (Old Mori Trail and the Pollywog Trail) compared to alternative B. The trails at this site generally receive low to moderate use. Therefore, assuming compliance, the overall impact on wildlife at Mori Point would be negligible to long term, minor, and adverse.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Mori Point. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Mori Point.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type (i.e., various species of butterflies, small mammals, predators, reptiles, and bird species, as described in chapter 3). Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005b); the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984); the *Mori Point Restoration and Trail Plan* (NPS 2010e); and the Martini Creek watershed assessment (San Mateo County) (CCC 2008).

The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts

would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MORI POINT PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Milagra Ridge

Alternative A: No Action. On-leash dog walking is currently allowed on all trails and fire roads. This site has documented low visitor use by bicyclists, walkers, and hikers, and high to moderate visitor use by dog walkers (table 10). Although current GGNRA regulations require dogs to be leashed at Milagra Ridge, unleashed dogs have been observed at the site; leash law violations totaled 35 from 2008 through 2011 and an additional 10 violations between 2012 and 2016 (tables 28a and 28b).

Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. Specifically, dog/coyote interactions have occurred at Milagra Ridge. In addition, wildlife may be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Some of the trails at this site are long, with excellent coastal scrub habitat directly adjacent to the trails, so there could be an avoidance of these trail corridors by birds and mammals that would actually cover more than small, localized areas. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Milagra Ridge because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Milagra Ridge, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide

projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Milagra Ridge. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Milagra Ridge. The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica (Sharp Park, located near Milagra Ridge) and addresses dog walking (including on-leash dog walking and off-leash DPAs) in this area (SFPD 2011, 261-262). Project activities included in the SNRAMP would protect and improve habitat and provide long-term beneficial impacts to wildlife.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/ chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type. Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005b), the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), site management plans for sites in GGNRA such as Milagra Ridge, and the Martini Creek watershed assessment (San Mateo County) (CCC 2008).

The long-term minor to moderate adverse impacts on wildlife from dogs at Milagra Ridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the SNRAMP should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

MILAGRA RIDGE ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site generally receive low to moderate use	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B also would allow dog walking on leash on the fire road and the trail to the westernmost overlook and WW II bunker, as well as on Milagra Battery Trail.

However, the trail to the top of the hill would not be open for dog walking in this alternative. Since dog walkers may walk along the edge of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the fire road or trails. In general, impacts on wildlife would be limited to the existing fire road and trails and the 6-foot corridors immediately adjacent to the trails/fire road. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical constraint. Impacts in wildlife areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse since dogs would be able to disrupt wildlife habitat through trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, alternative B would have fewer trails available to on-leash dogs compared to alternative A, and trails generally receive low to moderate use. Therefore, assuming compliance, alternative B would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is uncommon at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Milagra Ridge under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects and the SNRAMP should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MILAGRA RIDGE ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking in the same areas as alternative B and impacts would be the same: long term, minor to moderate, and adverse in the LOD area and negligible to long term, minor, and adverse overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at Milagra Ridge would be the same as those under alternative B: negligible.

MILAGRA RIDGE ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would prohibit dogs at Milagra Ridge, thus providing long-term protection of coastal scrub/chaparral/grassland habitat throughout the site. This protects not only the habitat, including interior areas, but all wildlife species that use the habitat at Milagra Ridge. Therefore, no impact would occur on wildlife at this site as a result of alternative D.

Since dogs would be prohibited from the site, there would be no impacts from commercial dog walking on wildlife.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Milagra Ridge under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from trail rehabilitation projects and the SNRAMP combined with the negligible impacts from any development or construction actions and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

MILAGRA RIDGE ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails as alternative B, with the addition of a trail to the top of the hill. In general, impacts would be limited to the existing trails and fire road and the 6-foot corridors immediately adjacent to the trails/fire road (LOD area). Impacts on wildlife from dogs in the LOD area would be long term, minor to moderate, and adverse, due to trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate

to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

Under this alternative, the on-leash dog trails and the LOD area are a greater portion of the site compared to alternatives B, C, and D. In addition, the trails generally receive low to moderate use. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which would indirectly affect wildlife. Therefore, assuming compliance, the overall impact on wildlife at Milagra Ridge would be long term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site would be the same those under alternative B: negligible.

MILAGRA RIDGE ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; on-leash dog trails and the LOD area are a greater portion of the entire site compared to alternatives B, C, and D; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative E, allowing on-leash dog walking on the fire road, the trail to the westernmost overlook and WW II bunker, Milagra Battery Trail, and the trail to the top of the hill. Since dog walkers may walk along the edge of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD that would extend 6 feet out from the edges of the fire road or trails. In general, impacts on wildlife would area be limited to the existing fire road and trails and the 6-foot corridors immediately adjacent to the trails/fire road. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical constraint. Impacts in wildlife areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate,

and adverse since dogs would be able to disrupt wildlife habitat through trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, the preferred alternative would have fewer trails available to on-leash dogs compared to alternative A, and trails generally receive low to moderate use. Therefore, assuming compliance, the preferred alternative would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Milagra Ridge. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Milagra Ridge. The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica (Sharp Park, located near Milagra Ridge) and addresses dog walking (including on-leash dog walking and off-leash DPAs) in this area (SFPD 2011, 261-262). Project activities included in the SNRAMP would protect and improve habitat and provide long-term beneficial impacts to wildlife.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type. Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005b), the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), site management plans for sites in GGNRA such as Milagra Ridge, and the Martini Creek watershed assessment (San Mateo County) (CCC 2008).

The negligible to long-term minor adverse impacts on wildlife from dogs at Milagra Ridge under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the SNRAMP should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce

the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MILAGRA RIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Sweeney Ridge/Cattle Hill

Alternative A: No Action. On-leash dog walking is currently allowed on all trails at Sweeney Ridge except the Notch Trail, which is closed to dogs. Cattle Hill is currently not part of GGNRA, but unrestricted dog walking also occurs at this site. These sites have documented moderate visitor use by dog walkers and off-leash incidents totaled 115 from 2008 through 2011 with an additional 11 violations between 2012 and 2016 (tables 29a and 29b); therefore, off-leash dog walking is occurring along the trails of these sites.

Under the no-action alternative at these sites, off-leash dog access to wildlife and associated habitat off trails would continue. Disturbance as a result of dogs includes physical damage to habitat or nests/ burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Some of the trails at these sites are long, with excellent coastal scrub habitat directly adjacent to the trails, so there could be an avoidance of these trail corridors by birds and mammals that would actually cover more than small, localized areas. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Sweeney Ridge/Cattle Hill because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. Commercial dog walking is uncommon at Sweeney Ridge/Cattle Hill. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge/Cattle Hill were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term

parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Sweeney Ridge. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Sweeney Ridge. The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica (Sharp Park, located near Sweeney Ridge) and addresses dog walking (including on-leash dog walking and off-leash DPAs) in this area (SFPD 2011, 261-262). Project activities included in the SNRAMP would protect and improve habitat and provide long-term beneficial impacts to wildlife.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type. Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005b), and the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984).

The long-term minor to moderate adverse impacts on wildlife from dogs at Sweeney Ridge/Cattle Hill under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the SNRAMP should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site generally receive low to moderate use	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs at Sweeney Ridge/Cattle Hill, thus providing long-term protection of coastal scrub/chaparral/grassland habitat throughout the site. This

protects not only the habitat, including interior areas, but all wildlife species that use the habitat at Sweeney Ridge/Cattle Hill. Therefore, no impact would occur on wildlife at these sites as a result of alternative B.

Since dog walking would not be allowed at Sweeney Ridge and Cattle Hill, commercial dog walking under alternative B would have no impact on wildlife.

Cumulative Impacts. The lack of impacts on wildlife under alternative B was considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects and the SNRAMP combined with the negligible impacts from any development or construction actions and the lack of impacts on wildlife from alternative B would result in beneficial cumulative impacts on wildlife.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at both sites	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, no dog walking would be allowed at Sweeney Ridge. Therefore, assuming compliance, no impact on wildlife from dogs at Sweeney Ridge would occur because dogs would be prohibited at the site. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to and including the Farallon View Trail. Since dog walkers may walk along the edge of the trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the trails. Impacts on wildlife from dogs in areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse, due to trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The Cattle Hill trails would allow on-leash dog walking under this alternative and these trails generally receive low to moderate use by dog walkers. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which would indirectly affect wildlife. In addition, the LOD area only makes up a small portion of the entire site. Therefore, when looking at the entire site the overall impact on wildlife at Cattle Hill would be long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since dog walking would not be allowed at Sweeney Ridge commercial dog walking under alternative C would have no impact to coastal scrub wildlife. Since commercial dog walking is not common at Cattle Hill, it is likely that this alternative would not have an impact on the number of dog walkers.

Cumulative Impacts. The lack of impacts from dogs at Sweeney Ridge under alternative C was considered together with the effects of the projects mentioned above under alternative A. The beneficial

effects from trail rehabilitation projects considered with the lack of impacts under this alternative would result in beneficial cumulative impacts for Sweeney Ridge. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts.

The long-term, minor, adverse impact to the coastal scrub wildlife community from dogs at Cattle Hill under alternative C were considered together with effects of the projects mentioned above under alternative A cumulative impacts. The beneficial effects from trail rehabilitation projects and the SNRAMP should reduce some of the adverse impacts on wildlife from alternative C. Cumulatively, there would be negligible impacts to the coastal scrub, chaparral, and grassland community at Cattle Hill, when added to these projects.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact at Sweeney Ridge	Dogs prohibited at Sweeney Ridge	Sweeney Ridge: Beneficial assuming compliance	Sweeney Ridge: Beneficial cumulative impacts
Cattle Hill: Overall long-term minor adverse impacts, assuming compliance	Cattle Hill: Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs	Cattle Hill: Beneficial to no change, assuming compliance	Cattle Hill: Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impact on wildlife from dogs would occur at this site.

Since dogs would not be allowed at Sweeney Ridge/Cattle Hill, there would be no impacts from commercial dog walking on wildlife.

Cumulative Impacts. Under alternative D, the cumulative impacts on wildlife at this park site would be the same those under alternative B: beneficial.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at both sites	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. At Sweeney Ridge, alternative E would allow on-leash dog walking along Sweeney Ridge Trail from Portola Discovery Site to the Notch Trail and on to the junction with Mori Ridge Trail. On-leash dog walking would be allowed on Sneath Lane. At Cattle Hill, dogs would be allowed on leash on the Baquiano Trail from Fassler Avenue up to and including the Farallon View Trail. Since dog walkers may walk along the edge of the trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the trails. Impacts on wildlife from dogs in areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse, due to trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The trails at Sweeney Ridge/Cattle Hill are long, with high quality habitat directly adjacent to the trails, and the on-leash dog trails under this alternative are a greater portion of the entire site compared to alternatives B, C, and D. Additionally, Cattle Hill trails would allow on-leash dog walking under this alternative as does alternative C, and these trails generally receive low to moderate use. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which would indirectly affect wildlife. However, when considering the entire site of Sweeney Ridge and Cattle, the trails only make up a portion of the entire site. Therefore, assuming compliance, the overall impact on wildlife at Sweeney Ridge and Cattle Hill would be long term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Sweeney Ridge and Cattle Hill, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Sweeney Ridge/ Cattle Hill under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects and the SNRAMP should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails at this site are long with high quality habitat directly adjacent to the trails, trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. On-leash dog walking would be allowed at Sweeney Ridge on Sneath Lane and Sweeney Ridge Trail between the Portola Discovery site and the Nike Missile Site. On-leash dog walking would be allowed at Cattle Hill on the Baquiano Trail from Fassler Avenue up to and including the Farallon View Trail. Since dog walkers may walk along the edge of the trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the trails. Impacts on wildlife from dogs in areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse, due to trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The Sweeney Ridge and Cattle Hill trails would allow on-leash dog walking in this alternative and these trails generally receive low to moderate use. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which would indirectly affect wildlife. In addition, the LOD area only makes up a small portion of the entire site. Therefore, when looking at the site in its entirety, the overall impact on wildlife at Sweeney Ridge and Cattle Hill would be long term, minor, and adverse.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Sweeney Ridge/Cattle Hill, it is likely that this alternative would not have an impact on the number of dog walkers.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge/Cattle Hill were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Sweeney Ridge/Cattle Hill. Additionally,

the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Sweeney Ridge/Cattle Hill. The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica (Sharp Park, located near Sweeney Ridge/Cattle Hill), and addresses dog walking (including on-leash dog walking and off-leash DPAs) in this area (SFPD 2011, 261-262). Project activities included in the SNRAMP would protect and improve habitat and provide long-term beneficial impacts to wildlife.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/ chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type. Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005b) and the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984).

The long-term, minor, adverse impacts to the coastal scrub wildlife community from dogs at Sweeney Ridge/Cattle Hill under the preferred alternative were considered together with effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the SNRAMP should reduce some of the adverse impacts on wildlife from alternative F. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Cumulatively, there would be negligible impacts to the coastal scrub, chaparral, and grassland community at Sweeney Ridge/Cattle Hill, when added to these projects.

SWEENEY RIDGE/CATTLE HILL PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Rancho Corral de Tierra

Alternative A: No Action. Currently, on-leash dog walking is allowed at Rancho Corral de Tierra. Some areas of Rancho are dominated by coastal scrub, chaparral, and grassland vegetation, including areas along trails at the site. Staff regularly working at Rancho characterize use by dog walkers at the site as moderate overall with moderate to high use in the Montara area; compliance with the leash law is generally low. At Rancho, NPS rangers have observed off-leash dogs running in areas with potentially sensitive habitat.

Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails would continue. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing or capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs have the potential to encounter larger mammals such as deer or coyotes and interact with or exchange parasites or diseases. In addition, wildlife may be displaced from high-quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Some of the trails at this site have coastal scrub habitat directly adjacent to the trails; birds and mammals could avoid these trail corridors, covering more than small, localized areas. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Rancho Corral de Tierra because occasional to frequent disturbances to wildlife from dogs would occur. According to information from the Montara Dog Group and subsequent staff observations, dog walkers, particularly off-leash dog walkers, primarily use the lower elevations of the site at both the Montara and El Granada areas. The terrain at El Granada is particularly steep and challenging, thus dog walking use in that area appears to be concentrated mostly in the lower elevations. Although the Montara area is less steep, visitor use there is similarly concentrated in the lower elevations, but some dog walkers in the Montara area do use trails that connect to the top of the Rancho site.

No permit system exists for dog walking under alternative A. Commercial dog walkers typically use the El Granada area off of Coral Reef Avenue; however, commercial dog walking is considered a low use at the site overall. Therefore, commercial dog walking would have negligible impacts on wildlife at this site.

Cumulative Impacts. Projects and actions in and near Rancho were considered for the cumulative impacts analysis (appendix K). Since the Rancho Corral de Tierra site has been transferred to NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking.

Additional actions have had, are currently having, or will have the potential to have adverse impacts on wildlife at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involves constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica and Montara (County of San Mateo 2016d, 1). Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The long-term minor to moderate adverse impacts on wildlife from dogs at Rancho Corral de Tierra under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from future trail rehabilitation projects under park stewardship programs should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

RANCHO CORRAL DE TIERRA ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	On-leash dog walking is allowed, but off-leash dogs have been observed in areas with potentially sensitive habitat; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. On-leash dog walking would be allowed on designated trails in two areas open to dog walking near Montara and El Granada, which were identified by the local dog walking group as key areas for this use. Since dog walkers may walk along the edge of the trail, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the trail. In general, impacts on wildlife would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trail. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical constraint. Impacts on wildlife in areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse since dogs would be able to disrupt wildlife habitat through trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or some may potentially habituate to these activities, but the displacement of wildlife from high-quality habitat and preferred habitat that is degraded by the presence of dogs would affect wildlife.

Under this alternative, the long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, alternative B would result in overall negligible to long-term minor adverse impacts on wildlife because there would be occasional disturbance to wildlife.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking at Rancho is not common, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/ grassland vegetation.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Rancho Corral de Tierra under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from future trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative

impacts on wildlife, since those impacts would be negligible due to mitigation thus reducing the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, dog walking under voice and site control would be allowed in a VSCA located between Le Conte and Tamarind Street, in a previously (partially) disturbed open area across the street and east of the Farallone View School. On-leash dog walking would be allowed on designated trails in two areas open to dog walking near Montara and El Granada.

In general, impacts would be limited to the VSCA, existing trails, and the 6-foot corridors immediately adjacent to the trails (LOD area). Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Wildlife in the LOD area and VSCA would be occasionally to frequently affected by dogs and may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs. The VSCA may lead to avoidance of the surrounding area by wildlife due to the concentration of dogs and noise as well as the elevated amount of dog waste and scent marking. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or some may potentially habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. Therefore, in the LOD area and VSCA, alternative C would result in long-term minor to moderate adverse impacts on wildlife at Rancho Corral de Tierra.

The long-term minor to moderate adverse impacts from dogs in the LOD area and VSCA would occur in a relatively small area when compared to the site as a whole, and the wildlife and supporting habitat constitute a small portion of the entire site. Physically restraining dogs in on-leash areas would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs would still occasionally disturb wildlife; wildlife may avoid trail corridors that allow on-leash dog walking and may be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, the overall impact on wildlife at Rancho Corral de Tierra would be negligible to long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Rancho, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife would be the same as those under alternative B: negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trail and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed in the Montara area on two existing trails that allow dog walking: Old San Pedro Mountain Road and the Farallon Cutoff. Dogs would be prohibited in other areas of the site, including the entire El Granada area. Impacts on wildlife in areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse since dogs would be able to disrupt wildlife habitat through trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas were dogs are present during peak activity or some wildlife may habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat due to the presence of dogs would indirectly affect wildlife.

Under this alternative, the long-term minor to moderate adverse impacts that would occur from dogs in the LOD represent a relatively small area of impact when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and may be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, alternative D would result in overall negligible to long-term minor adverse impacts on wildlife because there would be occasional disturbance to wildlife.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, no impact would occur as a result of commercial or permitted dog walking.

Cumulative Impacts. Under alternative D, the cumulative impacts on wildlife would be the same as those under alternative B: negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trail and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Dog walking restrictions under alternative E would be the same as under alternative C and impacts on wildlife would also be the same: overall, negligible to long-term, minor, and adverse, assuming compliance.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Rancho, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife would be the same as those under alternative B: negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trail and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on designated trails in three areas. Trails in Montara include Old San Pedro Mountain Road, LeConte Trail, Corona Pedro Trail, and Farallon Cutoff from the park boundary in the west to the intersection with Corona Pedro Trail. On-leash trails in the El Granada area include the Denniston Ridge Trail between the San Carlos Trail and its intersection with the Clipper Ridge Trail, the Clipper Ridge Trail, the Memorial Loop, the Almeria Trail, and the San Carlos Trail. In the Moss Beach area, on-leash dog walking would be allowed on the Vincente Ridge and Ranchette Trails. The preferred alternative would also establish a VSCA at Flat Top; however, the area is a former quarry site and is not comprised of sensitive coastal scrub/chaparral/grassland habitat, therefore will not impact wildlife. Since dog walkers may walk along the edge of the trail, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the trail. In general, impacts on wildlife would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trail. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical constraint. Impacts on wildlife in areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse since dogs would be able to disrupt wildlife habitat through trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas where dogs are present during peak activity or some wildlife may habituate to these activities, but the displacement of wildlife from preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

Under the preferred alternative, the long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from preferred habitat that is degraded by the presence of dogs. Therefore, assuming compliance, the preferred alternative would result in overall negligible to long-term minor adverse impacts on wildlife because there would be occasional disturbance to wildlife.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Rancho, it is likely that this alternative would not have

an impact on the number of dog walkers. Therefore, commercial dog walking under alternative F would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Rancho were considered for the cumulative impacts analysis (appendix K). Since the Rancho Corral de Tierra site has been transferred to the NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking.

Additional actions have had, are currently having, or will have the potential to have adverse impacts on wildlife at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involves constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica and Montara (County of San Mateo 2016d, 1). Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005a, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The overall negligible to long-term minor adverse impacts on wildlife from dogs at Rancho Corral de Tierra under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from future trail rehabilitation projects under park stewardship programs should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation thus reducing the potential for impacts. Therefore, cumulative impacts on wildlife under the preferred alternative would be expected to be negligible.

RANCHO CORRAL DE TIERRA PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trail and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

IMPACTS TO WILDLIFE IN WETLANDS AND AQUATIC COMMUNITIES BY SITE AND ALTERNATIVE

GGNRA contains both freshwater wetlands and coastal (estuarine) wetlands. Vegetation in these wetlands is composed of herbaceous plant species that support wildlife species. Wetlands are located at Rodeo Beach/South Rodeo Beach (Rodeo Lagoon and Rodeo Lake), Muir Beach (lagoon), Crissy Field, and

Mori Point. In general, dogs would be prohibited from accessing wetland areas at all locations in GGNRA, but violations of these closures have been documented (table 10).

MARIN COUNTY SITES

Muir Beach

Alternative A: No Action. The lagoon at Muir Beach is a small tidal waterbody fringed by wetland vegetation. The Lower Redwood Creek restoration project restored the channel of the creek, restored the lagoon, and created breeding ponds for California red-legged frog Dog walking is currently allowed on leash or under voice control on the beach and on leash on the Muir Beach Trail, Kaashi Way from the beach to the Coastal Trail, and the parking lot. The lagoon is currently closed to people and dogs, although it has been observed that closures at this site have been violated (appendix G). A total of 24 dog-related violations were reported from 2008 through 2011 at Muir Beach (table 15a). The most common violations were for having dogs off-leash (9 violations) and having dogs within closed areas (5 violations) (table 15b). An incident report included the following: "I observed the two dogs run into the Muir Beach Lagoon, an area that is closed to pets" (Muir Beach, November 9, 2010, Incident Report # 10-012822). The area is considered moderate to high use even though the lagoon is small in size compared to other lagoons at GGNRA. In addition, there is no physical barrier to prevent dogs from accessing the lagoon, and dogs gain access to the lagoon and surrounding wetland habitat at Muir Beach on an almost daily basis. The voice control area of Muir Beach encompasses the entrance channel of Redwood Creek and is located immediately adjacent to the shoreline of the lagoon. Surveys found bird diversity and use of the lagoon to be low, which could be attributed to dog use of the site; bird numbers are low and visitor use is high at this site.

Alternative A would result in continued long-term minor to moderate adverse impacts on wildlife at this site; specifically, waterbirds that use the restored lagoon are occasionally to frequently subjected to impacts from on-leash and voice control dogs through dogs barking at, chasing after, and being in proximity to roosting or feeding birds, potentially limiting their use of preferred habitat. A few individuals of the species in a small, localized area could be affected and reproductive success could be indirectly affected. A range is presented because the impact would depend on the time of year and intensity of use of the site by dogs and wildlife.

Under alternative A, no permit system exists for dog walking. At Muir Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration and creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Redwood Creek and Muir Beach lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that have cumulatively provided beneficial effects to wetlands include the *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project; the lagoon was restored in 2009 to provide a functional, resilient ecosystem while also providing habitat for special-status species and reducing flooding on Pacific Way. Similarly, the NPS and the California State Lands Commission formulated the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). This project also dramatically increased habitat for

California black rail as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009k). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which benefits wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Muir Beach is uncommon. However, the interim compendium amendment would have a slight beneficial effect on wetlands and aquatic habitats by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and nutrient addition from dog waste.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The long-term minor to moderate adverse impacts on wildlife from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects and the interim permitting should reduce some of the adverse impacts on wildlife from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add to the cumulative impacts on wildlife even though wetland mitigation has contributed to reducing impacts on wildlife. Since there would be a combination of beneficial and adverse effects from projects in and around Muir Beach, when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, minor to moderate, and adverse.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Lagoon closures have been violated; shorebirds, wading birds, and waterbirds that use the restored lagoon would occasionally to frequently be subjected to impacts from on-leash and voice control dogs barking at, chasing after, and being in proximity to roosting or feeding birds; bird numbers are low and visitor use is high at this site; range is presented because the intensity of use (by dogs and wildlife) is dependent on the time of year	N/A	Long-term minor to moderate adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, the protection of wetland and aquatic habitats would occur through requiring on-leash dog walking in the parking area, the Muir Beach Trail including the pedestrian bridge, the portion of Kaashi Way from the bridge to the beach, and the beach and would therefore not have an effect on wetland resources beyond the lagoon and Redwood Creek. As part of the restoration plan at this site, post-and-cable fencing would be installed between the tidal lagoon and Muir Beach to discourage visitors from accessing the lagoon, but the fencing would not physically exclude dogs from the area. If dogs are physically restrained on leash and deterred by a fence at this site, they should not gain access to the lagoon or its shorelines. Therefore, assuming compliance, alternative B would result in negligible impacts on wildlife at this site because on-leash dogs could still disturb wildlife through barking and by their presence.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration and creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Redwood Creek and Muir Beach lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that have cumulatively provided beneficial effects to wetlands include the *Wetland and Creek Restoration at Big Lagoon, Muir Beach* project; the lagoon was restored in 2009 to provide a functional, resilient ecosystem while also providing habitat for special-status species and reducing flooding on Pacific Way. Similarly, the NPS and the California State Lands Commission formulated the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS

2009k). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which benefits wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible impacts on wildlife from dogs at Muir Beach under alternative B were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative B would result in negligible cumulative impacts on wildlife.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	The lagoon is closed to dogs; physically restraining dogs on leash would not allow access to the lagoon or its shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site would be the same those under alternative B.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	The lagoon is closed to dogs; physically restraining dogs on leash would not allow access to the lagoon or its shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would be prohibited at the Muir Beach site except for on-leash dog walking in the parking lot and on the Muir Beach Trail leading to the parking lot. The lagoon is currently closed to people and dogs. Therefore, assuming compliance, alternative D would result in negligible impacts on wildlife at this site; even though dogs would not be allowed in proximity to the lagoon and only along the trail, on-leash dogs could still infrequently disturb roosting and feeding birds and other wildlife through barking and by their presence.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Muir Beach under alternative D were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative D would result in negligible cumulative impacts on wildlife.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be prohibited at the Muir Beach site except for the parking lot and the Muir Beach Trail, which supports some adjacent wetland/aquatic habitat	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Under alternative E, on-leash dog walking would be allowed in the parking area, on the Muir Beach Trail including the pedestrian bridge, and on the portion of Kaashi Way from the bridge to the beach, and dog walking under voice and sight control would be allowed in a VSCA at the south end of the beach (which includes coastal community wildlife habitat, not wetland and aquatic wildlife habitat). The lagoon is currently closed to people and dogs, and physical restraint of dogs on leash and compliance in the VSCA would not allow

dog access to the lagoon, its shorelines, or wetland habitat adjacent to trails used by shorebirds, wading birds, waterbirds, and other wildlife. Therefore, assuming compliance, alternative E would result in negligible impacts on wildlife at this site because on-leash dogs could still infrequently disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wildlife.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	The lagoon is closed to dogs; physical restraint of dogs on leash and compliance in VSCA would not allow dogs access to the lagoon, its shorelines, or wetland habitat adjacent to trails used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds and other wildlife through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the parking area, the Muir Beach Trail including the pedestrian bridge, the beach, and Kaashi Way from the beach to Pacific Way. Fencing would be installed along the dunes, the lagoon, and Kaashi Way as needed to protect resources. The tidal lagoon and Redwood Creek, which are currently closed to dogs, would remain so. Additionally, under the preferred alternative, when there is a surface water connection between the ocean and the lagoon, dogs would be prohibited from entering the surface waters. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on wildlife at this site; even though dogs would not be allowed in proximity to the lagoon and only along the trail, on-leash dogs could still infrequently disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on

the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration and creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Redwood Creek and Muir Beach lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that have cumulatively provided beneficial affects to wetlands include the *Muir Beach Wetland and Creek Restoration*; the tidal lagoon was restored in 2009 to provide a functional, resilient ecosystem while also providing habitat for special-status species and reducing flooding on Pacific Way. Similarly, NPS and the California State Lands Commission formulated the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009k). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which benefits wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there would be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible impacts on wildlife from dogs at Muir Beach under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wildlife.

MUIR BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be allowed on-leash in the parking lot, on the beach and path to the beach, and on the Muir Beach Trail, which supports some adjacent wetland/aquatic habitat	Beneficial, assuming compliance	Negligible cumulative impacts

Rodeo Beach/South Rodeo Beach (Rodeo Lagoon)

Alternative A: No Action. Dogs are currently required to be either on leash or under voice control at both Rodeo Beach and South Rodeo Beach. On-leash dog walking is allowed on the footbridge and access trail to the beach. Rodeo Lagoon is currently closed to people and dogs for overall resource protection. The NPS has restricted people and their pets from accessing the lagoon and its shoreline. However, there is no physical barrier to prevent dogs from accessing the lagoon. Shorebird numbers are high at this site and the area receives moderate to high use by dog owners/beachgoers. Park staff members have estimated that they observe dogs in the lagoon at least once a week, and on a daily basis during good weather.

Under the no-action alternative, dogs along the shoreline and in the lagoon could continue to affect water-dependent reptile, amphibian, and fish species. Specifically, egg masses and individual species could be affected directly though trampling or indirectly by increased turbidity (sedimentation) if dogs access the lagoon or its shorelines. Bird species that could be affected include waterbirds (pelicans, grebes, ducks, cormorants, gulls), wading birds (herons and egrets), and shorebirds. River otters also use habitat at the lagoon and could be affected by presence of dogs. Impacts would generally be the result of dog presence, dogs chasing after birds, and noise disruptions from barking; dogs frequently play and run around in the shallow water of the lagoon and inlet. Therefore, alternative A would result in continued long-term moderate adverse impacts on wildlife at Rodeo Lagoon because shorebirds, wading birds, and waterbirds such as pelicans that use the lagoon would frequently be subjected to impacts from on-leash and voice control dogs barking at, chasing after, and being in proximity to roosting or feeding birds, potentially limiting their use of preferred habitat and affecting their reproductive success.

Under alternative A, no permit system exists for dog walking. At Rodeo Beach/South Rodeo Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration and creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Rodeo Lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail as well as other aquatic species such as

waterfowl, shorebirds, fish, and seals (NPS 2009k). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Rodeo Beach/South Rodeo Beach is uncommon. However, the interim compendium amendment would have a slight beneficial effect on wetlands and aquatic habitats by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling and dog waste.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there would be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The long-term moderate adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add adversely to the cumulative impacts on wildlife, even though wetland mitigation has contributed to reducing impacts on wildlife. Since there would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach, when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, moderate, and adverse.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Historically, dogs have gained access to the closed lagoon at least once a week, and during good weather, on a daily basis; shorebirds, wading birds, and waterbirds such as pelicans that use the lagoon would frequently be subjected to impacts from on-leash and voice control dogs barking at, chasing after, and being in proximity to roosting or feeding birds; shorebird numbers are high and visitor use is moderate to high at this site	N/A	Long-term moderate adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed on Rodeo Beach, South Rodeo Beach, and on the footbridge and access trail to the beaches. Rodeo Lagoon and Rodeo Lake would remain closed to people and dogs. Additionally, a concurrent NPS project includes the installation of a post-and-cable fence along the beach side of Rodeo Lagoon to discourage visitors from accessing the lagoon, though it would not physically exclude dogs from this area. If dogs are physically restrained on leash at this site and deterred by a fence, they should not gain access to the lagoon or its shorelines. Therefore, assuming compliance, alternative B would result in negligible impacts on wildlife using the lagoon and lake and surrounding habitat because on-leash dogs could still disturb wildlife through barking and by their presence.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, but has recently begun to increase, it is likely that this alternative may increase the number of commercial dog walkers at this site in the future. Therefore, commercial dog walking under the preferred alternative would have a negligible to long-term minor adverse impact on wildlife.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration and creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Rodeo Lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009k). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory

waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there would be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative B were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impact from alternative B would result in negligible cumulative impacts on wildlife.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rodeo Lagoon is closed to dogs; physically restraining dogs on leash would not allow dogs access to Rodeo Lagoon or along shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Dogs would be required to be on leash on the footbridge to the beach, but would be allowed under voice and sight control in a VSCA on the main Rodeo Beach (which includes coastal community wildlife habitat, not wetland and aquatic wildlife habitat). Rodeo Lagoon and Rodeo Lake is currently closed to people and dogs. A concurrent NPS project includes the installation of a post-and-cable fence along the beach side of Rodeo Lagoon to discourage visitors from accessing the lagoon, though it would not physically exclude dogs from this area. Therefore, assuming compliance, alternative C would result in negligible impacts on wildlife using the lagoon and lake and surrounding habitat because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Rodeo Beach, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, but has recently begun to increase, it is likely that this alternative may increase the number of commercial dog walkers at this site in the future. Therefore, commercial dog walking under the preferred alternative would have a negligible to long-term minor adverse impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative C were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative C would result in negligible cumulative impacts on wildlife.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rodeo Lagoon is closed to dogs; physical restraint of dogs on leash and compliance in the VSCA would not allow dogs access to Rodeo Lagoon or along shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed on Rodeo Beach north of the footbridge and on the footbridge to the beach. Rodeo Lagoon and Rodeo Lake is currently closed to people and dogs. A concurrent NPS project includes the installation of a post-and-cable fence along the beach side of Rodeo Lagoon to discourage visitors from accessing the lagoon, though it would not physically exclude dogs from this area. If dogs are physically restrained on leash at this site and deterred by a fence, they should not gain access to the lagoon or its shorelines. Therefore, assuming compliance, alternative D would result in negligible impacts on wildlife using the lagoon and lake and surrounding habitat because on-leash dogs could still disturb wildlife through barking and by their presence.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative D were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in

negligible impacts. These negligible impacts combined with the negligible impacts from alternative D would result in negligible cumulative impacts on wildlife.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rodeo Lagoon is closed to dogs; physically restraining dogs on leash would not allow dogs access to Rodeo Lagoon or along shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Under alternative E, dog walking under voice and sight control would be allowed in a VSCA on Rodeo Beach and South Rodeo Beach. The lagoon would remain closed to people and dogs. The installation of the fence along the beach side of Rodeo Lagoon would discourage visitors from accessing the lagoon, but would not physically exclude dogs from this area. Although this alternative includes a VSCA, the addition of a fence as deterrent and compliance with regulations as well as on-leash requirements would result in protection of wildlife using wetland vegetation surrounding Rodeo Lagoon. Therefore, assuming compliance, alternative E would result in negligible impacts on wildlife species because on-leash dogs could still disturb wildlife through barking and by their presence.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Rodeo Beach, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs at the Rodeo Beach/South Rodeo Beach site. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, but has recently begun to increase, it is likely that this alternative may increase the number of commercial dog walkers at this site in the future. Therefore, commercial dog walking under the preferred alternative would have a negligible to long-term minor adverse impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative E were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wildlife.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rodeo Lagoon is closed to dogs; physical restraint of dogs on leash and compliance in the VSCA would not allow dogs access to Rodeo Lagoon or along shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow dogs on leash on the footbridge to the beach, but then dogs would be allowed under voice and sight control in a VSCA on Rodeo Beach (which is coastal community wildlife habitat, not wetland and aquatic wildlife habitat), to the sea stacks dividing the main beach from South Rodeo Beach. Rodeo Lagoon and Rodeo Lake are currently closed to people and dogs. A concurrent NPS project includes the installation of a post-and-cable fence along the beach side of Rodeo Lagoon to discourage visitors from accessing the lagoon, though it would not physically exclude dogs from this area. Additionally, under the preferred alternative, when there is a surface water connection between the ocean and the lagoon, dogs would be prohibited from entering the surface waters. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on wildlife using the lagoon and lake and surrounding habitat because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Rodeo Beach, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, but has recently begun to increase, it is likely that this alternative may increase the number of commercial dog walkers at this site in the future. Therefore, commercial dog walking under the preferred alternative would have a negligible to long-term minor adverse impact on wildlife.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration and creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Rodeo Lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009k). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach) which will benefit

wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wildlife.

RODEO BEACH/SOUTH RODEO BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rodeo Lagoon is closed to dogs; physical restraint of dogs on leash and compliance in the VSCA would not allow dogs access to Rodeo Lagoon or along shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts

Marin Headlands Trails

Alternative A: No Action. Currently, on-leash dog walking is allowed along the Coastal Trail from Hill 88 to Muir Beach, the Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, and Marin Drive. Dog walking under voice control (or on leash) is allowed along the Coastal Trail from the Golden Gate Bridge to Hill 88 including the Lagoon Loop Trail, the Coastal, Wolf Ridge and Miwok Loop, and the Old Bunker Fire Road Loop (includes section of the Coastal Trail). These trails experience low to moderate use by dog walkers but dog-related incidents are high at this site with a total of 269 from 2008 through 2011 and an additional 232 violations between 2012 and 2016 (tables 17a and 17b). The majority of dog-related incidents at the Marin Headlands Trails included having

dogs within areas closed to pets (table 17a). The Marin Headlands Trails area supports wetland vegetation around Rodeo Lake and extensive areas of wetlands in the valley bottom along Rodeo Valley Trail.

Under the no-action alternative, dogs along the shorelines of the wetlands and in Rodeo Lake could continue to affect water-dependent reptile, amphibian, and fish species. Specifically, egg masses and individual species could be affected directly though trampling or indirectly by increased turbidity (sedimentation) if dogs access the lake or wetland shorelines. Bird species that could be affected by the presence of dogs include aquatic bird species (grebes, ducks, cormorants, gulls, waterfowl), wading birds (herons and egrets), and shorebirds. Impacts would generally be the result of dog presence, dogs chasing after birds, and noise disruptions from barking. Dogs have gained access to Rodeo Lake and affected wildlife through barking and chasing after; wildlife species that use areas of wetlands in the valley bottom along Rodeo Valley Trail should not be affected by dogs since dogs would not be allowed in the vicinity of this trail.

Alternative A would result in continued long-term minor adverse impacts on wildlife at Marin Headlands Trails because shorebirds, wading birds, and waterbirds that use the lake would occasionally be disturbed by on-leash and voice control dogs barking at, chasing after, and being in proximity to roosting or feeding birds, potentially limiting their use of preferred habitat.

Under alternative A, no permit system exists for dog walking. At Marin Headlands Trails, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife species that use wetland vegetation.

Cumulative Impacts. Projects and actions in and near Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration and creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Rodeo Lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay) that restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail, as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009k). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Marin Headlands Trails is uncommon. However, the interim compendium amendment would have a slight beneficial effect on wetlands vegetation by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage and nutrient addition from dog waste.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Doyle Drive Project* (Presidio Parkway 2008) will

impact or have the potential to negatively affect wetland resources and wildlife within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there would be no net loss of wetland acreage, functions, or values.

As stated previously, the loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The long-term minor adverse impacts on wildlife from dogs at Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add to the cumulative impacts on wildlife, even though wetland mitigation has contributed to reducing impacts on wildlife. Since there would be a combination of beneficial and adverse effects from projects in and around Marin Headlands Trails, when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Dogs would continue to gain access to Rodeo Lake and birds would occasionally be subjected to impacts by dogs through barking and chasing after; wildlife using areas of wetlands in the valley bottom along Rodeo Valley Trail should not be affected by dogs since dogs would not be allowed in the vicinity of this trail	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, dogs would not be allowed at this site. Therefore, assuming compliance, no impact on wildlife from dogs at this site would occur.

Since dogs would not be allowed at the Marin Headlands Trails, no impacts on wildlife species that use wetland vegetation would occur from commercial dog walkers.

Cumulative Impacts. Projects and actions in and near Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration and creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Rodeo Lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay) that restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail, as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009k). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources and wildlife within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there would be no net loss of wetland acreage, functions, or values.

As stated previously, the loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The lack of impacts on wildlife from dogs under alternative B was considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. Cumulatively, alternative B would have negligible impacts on wildlife at this park site when added to other past, present, or foreseeable future actions at and around this park site.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed along the Lower Rodeo Valley Trail Corridor. This corridor extends from the Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via North Lagoon Loop Trail, Miwok Trail, and Rodeo Valley Trail including the connector trail from the Rodeo Valley Trail to the Smith Road Trailhead. On-leash dog walking would also be allowed on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), and the Batteries Loop Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands Trails, while preserving and maintaining the integrity of interior habitat. The valley bottom along Rodeo Valley Trail Corridor is adjacent to extensive areas of freshwater vegetation and the Miwok Trail is adjacent to Rodeo Lake, which supports

shoreline wetland vegetation. Rodeo Lake is closed to dogs and is densely vegetated with willows along the shoreline making access difficult. Rodeo Lagoon is closed to dogs and humans for overall resource protection. However, compared to alternative A, this alternative would allow dogs on a much longer section of the Rodeo Valley Trail, which passes through or is directly adjacent to wetland habitat. Alternative C would allow dogs on two new bridges that cross over a creek and wetlands at the site. Therefore, assuming compliance, alternative C would result in negligible to long-term minor adverse impacts on wildlife using the lake and other wetland habitats at the site because a longer section of the Rodeo Valley Trail would be available for dog walking and because on-leash dogs could still disturb roosting and feeding birds and other wildlife by barking and by their presence.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under alternative C, permits to walk more than three dogs, with a maximum of six, would not be issued for the Marin Headlands Trails site. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife species that use wetland vegetation.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible to long-term minor adverse impacts from alternative C would result in negligible cumulative impacts on wildlife.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Rodeo Lake is closed to dogs; a longer section of the Rodeo Valley Trail would be available for dog walking but physically restraining dogs on leash would not allow access in habitat off trail along the Rodeo Valley Trail Corridor, which supports wetlands and could be used by shorebirds, wading birds, waterbirds, and other wildlife	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, assuming compliance, no impact on wildlife from dogs at this site would occur.

Since dogs would not be allowed at the Marin Headlands Trails, no impacts on wildlife species that use wetland vegetation would occur from commercial dog walkers.

Cumulative Impacts. Under alternative D, the cumulative impacts on wildlife at this park site would be the same those under alternative B: negligible.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Conzelman Coastal Trail from Highway 101 to the McCullough intersection and then to the Coastal Trail Bike Route, including Julian Road, to Rodeo Beach parking lot. On-leash dog walking would be available on the Old Bunker Fire Road Loop (which includes a section of the Coastal Trail), Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, Marin Drive, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands Trails, while preserving and maintaining the integrity of interior habitat. The valley bottom along Rodeo Valley Trail Corridor is adjacent to extensive areas of freshwater vegetation and the Miwok Trail is adjacent to Rodeo Lake, which supports shoreline wetland vegetation. Rodeo Lake is closed to dogs and is densely vegetated with willows along the shoreline making access difficult. Rodeo Lagoon is closed to dogs and humans for overall resource protection, including wetland shorelines used by shorebirds, wading birds, waterbirds, and other wildlife. Therefore, assuming compliance, alternative E would result in negligible impacts on wildlife using the lake and surrounding wetland habitat because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence. Even though alternative E would allow more dog access at the site, the difference in dog use between alternatives E and C is not considered large enough to cause a change in the intensity of the impact relative to the area of the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under alternative E, permits to walk more than three dogs, with a maximum of six, would not be issued for the Marin Headlands Trails site. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife using wetland vegetation.

Cumulative Impacts. The negligible impacts on wildlife from dogs under alternative E were considered together with the effects of the projects mentioned above under alternative B. Cumulatively, alternative E would have negligible impacts on wildlife species that use wetland vegetation at this park site when added to other past, present, or foreseeable future actions at and around this park site.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash and closing Rodeo Lake would protect wildlife in wetlands along Rodeo Lake and along the Rodeo Valley Trail Corridor, which also supports wetland habitat	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, which extends from the Rodeo Beach parking lot to the

intersection of Bunker and McCullough Roads via the North Lagoon Loop Trail, Miwok Trail and the Rodeo Valley Trail, and includes the connector trail from Rodeo Valley Trail to Smith Road trailhead. On-leash dog walking would be available on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), Batteries Loop Trail, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands Trails, while preserving and maintaining the integrity of interior habitat. The valley bottom along Rodeo Valley Trail Corridor is adjacent to extensive areas of freshwater vegetation and the Miwok Trail is adjacent to Rodeo Lake, which supports shoreline wetland vegetation. Rodeo Lake is closed to dogs and is densely vegetated with willows along the shoreline making access difficult. Rodeo Lagoon is closed to dogs and humans for overall resource protection, including wetland shorelines used by shorebirds, wading birds, waterbirds, and other wildlife. However, compared to alternative A, this alternative would allow dogs on a much longer section of the Rodeo Valley Trail, which passes through or is directly adjacent to wetland habitat. The preferred alternative would allow dogs on two new bridges that cross over a creek and wetlands at the site. Therefore, assuming compliance, the preferred alternative would result in negligible to long-term, minor, adverse impacts on wildlife using the lake and other wetland habitats at the site because a longer section of the Rodeo Valley Trail would be available for dog walking and because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Permits would be issued allowing dog walkers to have more than three dogs on a short segment of the North Lagoon Loop Trail. Allowing dog walkers with four to six dogs on the North Lagoon Loop Trail from the Rodeo Beach parking lot to the pedestrian bridge creates a loop with the permitted areas allowed under the preferred alternative for Rodeo Beach. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife species that use wetland vegetation.

Cumulative Impacts. Projects and actions in and near Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration and creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Rodeo Lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail, as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009k). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects, like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources and wildlife within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in

the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions or values.

As stated previously, the loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible to long-term minor adverse impacts on wildlife from dogs at Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible to long-term minor adverse impacts from the preferred alternative would result in negligible cumulative impacts on wildlife.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE F CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Rodeo Lake is closed to dogs; a longer section of the Rodeo Valley Trail would be available for dog walking but physically restraining dogs on leash would not allow dogs access to habitat off trail along the Rodeo Valley Trail Corridor, which supports wetlands and could be used by shorebirds, wading birds, waterbirds, and other wildlife	Beneficial, assuming compliance	Negligible cumulative impacts

SAN FRANCISCO COUNTY SITES

Crissy Field

Common to All Alternatives. Impacts from dogs as a result of the two different definitions of the Crissy Field WPA (the 36 CFR 7.97(d) definition for alternative A and the Warming Hut to approximately 900 feet east of the former Coast Guard Pier definition for alternatives B–F) will be the same for all alternatives. Even though the WPA would be expanded for alternatives B–F, this change would not influence the overall impacts analysis at this site because it would neither increase nor decrease the impacts at Crissy Field described in the paragraphs that follow. Further explanation of these two definitions can be found in the "Current Regulations and Policies" section of chapter 2.

Alternative A: No Action. Both freshwater and tidal wetlands are present at Crissy Field. From 1998 through 2000, a restoration project reestablished an 18-acre tidal marsh with a narrow fringe of salt marsh vegetation that links with San Francisco Bay at Crissy Field. Freshwater wetlands are located in swales created in the dunes at Crissy Field and primarily consist of cattails and willow species. The tidal marsh is a high use area for birds, and the area is fenced and is currently closed to people and dogs. The park has documented the highest (within Crissy Field site) year-round bird densities in the Crissy Marsh, with slightly lower densities in the dune swale and rear dune; bird species richness has been reported at its

highest in the wetland, with slightly less richness in the beach and nearshore areas (Ward and Ablog 2006, 25–26 and 92–93). Migrating ducks, shorebirds, California brown pelicans, and diving birds such as cormorants, as well as resident gulls and wading birds, feed or rest in the tidal marsh at Crissy Field. Despite protection of the restored tidal marsh by fencing and prohibiting dogs in the WPA, dogs under voice control can gain access at low tide to the marsh through the tidal inlet that allows exchange of water between the marsh and San Francisco Bay. Generally, birds that use the marsh are not subjected to disturbance from dogs except at the tidal inlet. However, the park has documented that dogs go under the bridge into Crissy Marsh and access the flood shoal areas along the marsh and chase birds; further, a western grebe was killed at the Crissy Field site by a dog that accessed the marsh at this location.

This site has documented moderate to high visitor use and moderate to high numbers of dog walkers (table 10). In general, compliance with dog walking regulations is low, and from 2008 through 2011 a total of 510 incidents were reported. Of the 510 incidents, 283 incidents were for having dogs off leash within the Crissy Field WPA when the seasonal leash restriction was in effect (table 20a). Other common incidents include violation of a closed area (58 incidents), having dogs off leash (65 incidents), and possession of a pet in a closed area (15). Other violations were issued for having pets in Crissy Field Lagoon, which is closed to humans and pets. Dogs gaining access to the marsh can disturb birds by chasing after them and generally by their activity level and by barking. Birds can relocate to avoid dogs, but in doing so they expend energy necessary to maintain conditions for migration, reproduction, and general health. Birds on the open water of the marsh are susceptible to impacts from dogs swimming in the marsh (which has been observed by park staff) and are also susceptible to chasing after and harassment by dogs if roosting on land.

Alternative A would result in continued long-term minor adverse impacts on wildlife associated with the restored marsh at Crissy Field because birds would occasionally be subjected to impacts from on-leash and voice control dogs that gain access to the marsh. Impacts would occur from dogs barking at, chasing after, and being in proximity to roosting or feeding birds.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking occurs regularly at Crissy Field. Commercial dog walking would continue to contribute to the long-term minor adverse impacts on wildlife. Commercial dog walkers with multiple dogs under voice control would impact wildlife by barking at, chasing after, and being in close proximity to feeding and roosting birds.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration and creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Crissy Field and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail, as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009k). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008). Beginning in 1997, efforts to

remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of the 18-acre tidal marsh.

The PTMP (described earlier) was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. Management objectives in the PTMP that are applicable to wildlife include identifying and protecting sensitive wildlife species, and restoring and maintaining their habitats. The PTMP also preserves, enhances, and increases natural habitats managed by the Presidio Trust. For example, historic forests are being rehabilitated, wetlands are being enhanced, and native plant and wildlife species are being protected (Presidio Trust 2002, ii). As a result, the PTMP has beneficial impacts on wildlife in the vicinity of Crissy Field.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Crissy Field occurs regularly. Therefore, the interim compendium amendment would have a beneficial effect on wetland vegetation by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects, like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The long-term minor adverse impacts on wildlife from dogs at Crissy Field under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add adversely to the cumulative impacts on wildlife, even though wetland mitigation has contributed to reducing impacts on wildlife. Since there would be a combination of beneficial and adverse effects from projects in and around Crissy Field, when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

CRISSY FIELD ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	The tidal marsh is a high use area for shorebirds, wading birds, and waterbirds and is fenced and protected from dogs, although dogs have been observed in the marsh; these birds would occasionally be subjected to impacts from on-leash and voice control dogs that gain access to the marsh through barking and chasing after and by proximity to roosting or feeding birds; visitor use is high at this site	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the promenade, Crissy Airfield, East and Central beaches, paths leading to Central Beach, trails and grassy areas near East Beach, around the Old Coast Guard Station, and on the Mason Street Bike Path. Dog walking would be prohibited in the WPA and the tidal marsh. Physically restraining dogs on leash would not allow dog access to the marsh or shorelines used by shorebirds, wading birds, waterbirds, and other wildlife. Therefore, alternative B would result in negligible impacts on wildlife using the restored tidal marsh because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Crissy Field, dogs walked by commercial dog walkers would constitute the majority of the adverse impacts on wildlife from dogs at the site. Overall impacts on wildlife from dogs walked by both commercial and private individuals are summarized in the previous paragraph.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Crissy Field under alternative B were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative B would result in negligible cumulative impacts on wildlife.

CRISSY FIELD ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in marsh; physically restraining dogs on leash would not allow dogs access to the marsh or shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. The addition of a VSCA on Central Beach (which includes coastal community wildlife habitat, not wetland and aquatic wildlife habitat) and another VSCA on Crissy Airfield in alternative C would allow dog walking under voice and sight control. On-leash dog walking would be available along the promenade, the eastern and western sections of Crissy Airfield, the Mason Street Bike Path, trails and grassy areas near East Beach, around the Old Coast Guard Station, paths to Central Beach, and picnic areas. Physically restraining dogs on leash would not allow access to marsh, which is currently closed to people and dogs, or shorelines (including the WPA). Therefore, assuming compliance, alternative C would result in negligible impacts on wildlife species using the tidal marsh because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Crissy Field, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the above paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Crissy Field under alternative C were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative C would result in negligible cumulative impacts on wildlife.

CRISSY FIELD ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in the marsh; physical restraint of dogs on leash and compliance in the VSCAs would not allow dogs access to the marsh or shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would prohibit dogs on all beaches, but would establish a VSCA on the western section of Crissy Airfield (which consists of manicured lawn, not wetland and aquatic wildlife habitat). Dogs would be physically restrained on leash in all other areas of Crissy Field and not allowed on beaches (including the WPA). In addition, people and dogs are currently prohibited in the tidal marsh. Therefore, assuming compliance, alternative D would result in negligible impacts on wildlife using the tidal marsh and surrounding habitat because on-leash dogs could still disturb wildlife through barking and by their presence.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Crissy Field under alternative D were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative D would result in negligible cumulative impacts on wildlife.

CRISSY FIELD ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in the marsh; physical restraint of dogs on leash and compliance in VSCA would not allow dogs access to the marsh or shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking in the WPA, on the promenade, East Beach, paths to Central Beach, trails and grassy areas near East Beach, around the Old Coast Guard Station, and on the Mason Street Bike Path.

Dogs would be under voice and sight control in two VSCAs established on Crissy Airfield and Central Beach (VSCAs do not include wetland and aquatic wildlife habitat). The tidal marsh would remain closed to dogs and people. Therefore, assuming compliance, alternative E would result in negligible impacts on wildlife species because on-leash dogs could still disturb wildlife through barking and by their presence.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Crissy Field, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as in the previous paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Crissy Field under alternative E were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wildlife.

CRISSY FIELD ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in marsh; physical restraint of dogs on leash and compliance in the VSCAs would not allow dogs access to marsh or shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The addition of one VSCA on Central Beach (which includes coastal community wildlife habitat, not wetland and aquatic wildlife habitat) and one on the eastern portion of Crissy Airfield in the preferred alternative would allow dog walking under voice and sight control. On-leash dog walking would be required for the remainder of the site and physically restraining dogs on leash would not allow access to marsh, which is currently closed to people and dogs, or shorelines (including the WPA). Therefore, assuming compliance, the preferred alternative would result in negligible impacts on wildlife species using the tidal marsh because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Crissy Field, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Impacts on

wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the above paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration and creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Crissy Field and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail, as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009k). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

The PTMP would have beneficial impacts on wildlife in the vicinity of Crissy Field. Plans under the PTMP include rehabilitating the historic planted forest; preserving, enhancing, and managing other forested areas that provide values such as windbreaks, vistas, screening, and wildlife habitat; identifying, protecting, enhancing, restoring, and expanding the Presidio's ecosystems; protecting, establishing, and managing areas of native vegetation; identifying, monitoring, and protecting sensitive wildlife species, and restoring and maintaining their habitats; rehabilitating and enhancing natural water resources; managing on-site water resources to protect ground and surface water, natural wetland and riparian habitat, and water supplies for the Presidio community; and protecting geologic and soil features and minimizing erosion and unnatural disturbances (Presidio Trust 2002, 20-37).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects, like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible impacts on wildlife from dogs at Crissy Field under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wildlife.

CRISSY FIELD PREFERRED ALTERNATIVE F CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in marsh; physical restraint of dogs on leash and compliance in the VSCAs would not allow dogs access to marsh or shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial to no change, assuming compliance	Negligible cumulative impacts

SAN MATEO COUNTY SITES

Mori Point

Alternative A: No Action. Dogs are currently allowed on leash on all trails at Mori Point. This site has moderate to high visitor use by dog walkers. Although current GGNRA regulations require dogs to be leashed at Mori Point, unleashed dogs are often observed at the site. Because of the presence of the California red-legged frog and the San Francisco garter snake at Mori Point wetlands, an NPS enhancement project has created four ponds to enhance the freshwater wetland habitat and to provide foraging habitat for the San Francisco garter snake. The project included associated wetland vegetation plantings, educational signs, and fences around the ponds and wetland habitat to prevent impacts on the California red-legged frog. Despite the educational signs and fences that have been placed around the ponds and wetland habitat at Mori Point, dogs have occasionally been observed in the ponds. In addition, some visitors are not complying with the leash law; off-leash violations totaled 146 from 2008 through 2011 (table 27a).

Alternative A would result in negligible to long-term minor adverse impacts on wildlife species using wetlands at Mori Point because birds and other wildlife species would occasionally be subjected to impacts from off-leash dogs that gain access to the ponds and associated habitat. Impacts would result from dogs barking at, chasing after, and being in proximity to roosting or feeding birds or other wildlife. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative A, no permit system exists for dog walking. At Mori Point, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration and creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Mori Point and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica (Sharp Park, located near Mori Point) and addresses dog walking (including on-leash dog walking and off-leash DPAs) in this area (SFPD 2011, 261-262). Project activities included in the SNRAMP, including the restoration of the Laguna Salada at Sharp Park, would protect and improve habitat and provide long-term beneficial impacts to wildlife that use wetland habitats.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects, like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) could negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects should reduce some of the adverse impacts on wildlife from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add to the cumulative impacts on wildlife, even though wetland mitigation has contributed to reducing impacts on wildlife. Since there would be a combination of beneficial and adverse effects from projects in and around Mori Point, when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Dogs have occasionally been observed in fenced ponds; birds and other wildlife using pond habitat would infrequently be subjected to impacts from on-leash dogs (and off-leash dogs violating the leash law) barking at, chasing after, and being in proximity to wildlife; visitor use is moderate at this site	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Mori Coastal Trail and the beach (the portion owned by the NPS), but dogs would not be allowed on Old Mori Trail or the Pollywog Trail, which are located adjacent to the freshwater ponds. Therefore, assuming compliance, alternative B would result in negligible impacts on wildlife because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Mori Point under alternative B were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative B would result in negligible cumulative impacts on wildlife.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in ponds; physically restraining dogs on leash would not allow dogs access to ponds or shorelines used by birds and other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds through barking and by their presence	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, dog walking restrictions would be the same as alternative B, except dogs would be allowed on leash on Old Mori Trail, which passes by the freshwater ponds that prohibit dogs. Dogs would not be allowed on the Pollywog Trail, which is also adjacent to the ponds. Physically restraining dogs on leash would not allow dog access to the ponds or shorelines used by wading birds, waterbirds, and other wildlife. To protect the ponds and California red-legged frog habitat, an exclusionary fence that effectively keeps visitors and dogs from accessing these wetland areas exists at the site. Therefore, alternative C would result in negligible impacts on wildlife using the ponds at Mori Point because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Mori Point under alternative C were considered together with the effects of the projects mentioned above under alternative A. There

would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative C would result in negligible cumulative impacts on wildlife.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in ponds; physically restraining dogs on leash would not allow dogs access to ponds or shorelines used by birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, assuming compliance, no impact on wildlife from dogs would occur at this site.

Since dogs would not be allowed at Mori Point, no impacts on wildlife species that use wetland vegetation would occur from commercial or permitted dog walkers.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Mori Point under alternative D was considered together with the effects of the projects mentioned above in alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the lack of impacts from alternative D would result in negligible cumulative impacts on wildlife.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Mori Coastal Trail and the portion of beach owned by the NPS, as well as on Old Mori Trail, which is located adjacent to the freshwater ponds, and the Pollywog Trail, which ends near the creek and riparian habitat. Physically restraining dogs on leash would not allow dog access to the ponds or shorelines used by wading birds, waterbirds, and other wildlife. To protect the ponds and California red-legged frog habitat, an exclusionary fence that effectively keeps visitors and dogs from accessing these wetland areas exists at the site. Therefore, alternative E would result in negligible impacts on wildlife using the ponds at Mori Point because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking

activity is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Mori Point under alternative E were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wildlife.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in ponds; physically restraining dogs on leash would not allow dogs access to ponds or shorelines used by birds and other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds through barking and by their presence	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Mori Coastal Trail, Old Mori Trail, Pollywog Trail, Mori Headlands Trail, and the portion of beach owned by the NPS. Physically restraining dogs on leash would not allow dog access to the ponds or shorelines used by wading birds, waterbirds, and other wildlife. To protect the ponds and California red-legged frog habitat, an exclusionary fence that effectively keeps visitors and dogs from accessing these wetland areas exists at the site. Therefore, the preferred alternative would result in negligible impacts on wildlife using the ponds at Mori Point because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration and creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Mori Point and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica (Sharp Park, located near Mori Point) and addresses dog walking (including on-leash dog walking and off-leash DPAs) in this area (SFPD 2011, 261-262). Project

activities included in the SNRAMP, including the restoration of the Laguna Salada at Sharp Park, would protect and improve habitat and provide long-term beneficial impacts to wildlife that use wetland habitats.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects, like the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) could negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible impacts on wildlife from dogs at Mori Point under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wildlife.

MORI POINT PREFERRED ALTERNATIVE F CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in ponds; physically restraining dogs on leash would not allow dogs access to ponds or shorelines used by birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial to no change, assuming compliance	Negligible cumulative impacts

IMPACTS TO WILDLIFE IN THE NATIVE HARDWOOD FOREST AND DOUGLAS-FIR/COAST REDWOOD COMMUNITY BY SITE AND ALTERNATIVE

In the planning area at GGNRA, native hardwood forest exists at Oakwood Valley, Alta Trail/Orchard Fire Road/Pacheco Fire Road, and Fort Baker. The Douglas-fir/coast redwood community is found sporadically in portions of Homestead Valley and in Oakwood Valley, but outside the area accessed by dogs, and is therefore not discussed further in this section with reference to these sites. The native hardwood forest or Douglas-fir/coast redwood communities exist at Oakwood Valley, Alta Trail/Orchard Fire Road/Pacheco Fire Road, and Fort Baker, and impacts on the wildlife species that inhabit these communities at these sites are discussed in more detail in the paragraphs that follow.

As previously discussed in chapter 3, a variety of wildlife species, such as woodland birds (passerines such as chestnut-backed chickadee, flycatchers, warblers, woodland hawks, and owls) and small mammals (shrews, squirrels, and dusky-footed wood rat), use the woodland habitats at GGNRA. Other animals such as deer, coyote, and bobcat, often found in more open habitat, can use woodlands as

protected cover and resting areas. Birds in woodlands primarily use the canopy and middle-level forest but may nest and forage in the herbaceous understory and on the ground. Mammals would be found mainly at ground level in this habitat.

MARIN COUNTY SITES

Alta Trail/Orchard Fire Road/Pacheco Fire Road

Alternative A: No Action. Dogs are currently allowed under voice control or on leash on the trails and roads from Marin City to Oakwood Valley. These areas experience high use by dog walkers (table 10), especially commercial dog walkers, with typically 5 to 12 dogs under voice control per commercial walker.

Under the no-action alternative, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue, and occasional disturbance would include physical damage to habitat or nests and burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs. These impacts would be considered long term, minor, and adverse because native hardwood forests and the wildlife associated with this habitat constitute only a small portion of the site.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road is common, with commercial dog walkers often having 5 to 12 dogs under voice control at one time. Commercial dog walking would continue to create long-term minor adverse impacts on wildlife. Dogs under voice control would continue to disturb the natural habitat of wildlife.

Cumulative Impacts. Projects and actions in and near Alta Trail and Orchard and Pacheco fire roads were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect native hardwood forests at GGNRA park sites such as Alta Trail and Orchard and Pacheco fire roads. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit native hardwood forest communities. Generally, construction projects that affect this community require project-specific mitigation measures to

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road occurs regularly. Therefore, the interim compendium amendment would have a beneficial effect on native hardwood forests by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and dog waste.

address impacts. Therefore, these projects would not likely contribute to the cumulative impacts.

The long-term minor adverse impacts on wildlife from dogs at Alta Trail and Orchard and Pacheco fire roads under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. The adverse impacts resulting from construction projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; occasional disturbance would include physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitutes a very small portion of entire site	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed on the Alta Trail to Orchard Fire Road, on Orchard Fire Road, and on Pacheco Fire Road. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, dog waste, and nutrient addition. Chasing after wildlife would be eliminated but on-leash dogs would still occasionally disturb wildlife behavior. Wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs, and displacement to another location is an impact on wildlife.

The long-term minor adverse impacts from the high use of dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and their presence. The overall impact on wildlife from on-leash dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be negligible.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would constitute the majority of the adverse impacts on wildlife from dogs at the site. Overall impacts on wildlife from dogs walked by both commercial and private individuals are summarized above.

Cumulative Impacts. Projects and actions in and near Alta Trail and Orchard and Pacheco fire roads were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as

trail rehabilitation performed as part of park stewardship programs provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect native hardwood forests at GGNRA park sites such as Alta Trail and Orchard and Pacheco fire roads. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit native hardwood forest communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts. Therefore, these projects would not likely contribute to the cumulative impacts.

The negligible impacts on wildlife from dogs at Alta Trail and Orchard and Pacheco fire roads under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation projects along with the negligible impacts from any construction actions and the negligible impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE B CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitute a very small portion of entire site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and overall impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Alta Trail, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at the Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on

wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers: negligible.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site would be the same those under alternative B: negligible.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitutes a very small portion of entire site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, assuming compliance, no impact on wildlife would occur.

Since dogs would not be allowed at this site, no impacts on wildlife species that use native hardwood forests would occur from commercial dog walkers.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Alta Trail and Orchard and Pacheco fire roads under alternative D was considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the trail rehabilitation projects along with the negligible impacts from any construction actions and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would not be allowed at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Alta Trail to the junction with the Morning Sun Trail, and on Orchard and Pacheco fire roads. While the mileage open to dog walking would be greater than that described for alternative B, the impacts would be similar, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Alta Trail, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Alta Trail and Orchard and Pacheco fire roads under alternative E were considered together with the effects of the projects mentioned under alternative B. The beneficial effects from the trail rehabilitation projects along with the negligible impacts from any construction actions and the negligible impacts on wildlife from alternative E would result in negligible cumulative impacts on wildlife.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitutes a very small portion of entire site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative E. The preferred alternative would allow on-leash dog walking on the Alta Trail from Donahue Street to the junction with the Morning Sun Trail and on Orchard and Pacheco fire roads. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, dog waste, and nutrient addition. Chasing after wildlife would be eliminated but on-leash dogs would still occasionally disturb wildlife behavior. Therefore, wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs, and displacement to another location is still considered an impact on wildlife.

The long-term minor adverse impacts from the high use of dog walking in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and by their presence. The overall impact on wildlife from on-leash dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be negligible.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Alta Trail, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed for Alta Trail from Donahue Street to the intersection with Orchard Trail. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail, Orchard Fire Road, and Pacheco Fire Road, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers: negligible.

Cumulative Impacts. Projects and actions in and near Alta Trail and Orchard and Pacheco fire roads were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect native hardwood forests at GGNRA park sites such as Alta Trail and Orchard and Pacheco fire roads. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit native hardwood forest communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts. Therefore, these projects would have negligible cumulative impacts on wildlife.

The negligible impacts on wildlife from dogs at Alta Trail and Orchard and Pacheco fire roads under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation projects combined with the negligible impacts from any construction actions and the negligible impacts on wildlife from the preferred alternative would result in negligible cumulative impacts on wildlife.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD PREFERRED ALTERNATIVE F CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitute a very small portion of entire site	Beneficial, assuming compliance	Negligible cumulative impacts

Oakwood Valley

Alternative A: No Action. Under alternative A under alternative A, dogs are currently allowed under voice control or on leash on the Oakwood Valley Fire Road and Oakwood Valley Trail from junction with Fire Road to junction with Alta Trail, and on leash on the Oakwood Valley Trail from trailhead to junction with Oakwood Valley Fire Road. These areas experience high use by hikers, runners, bicyclists, and horseback riders and moderate use by dog walkers (table 10).

Under the no-action alternative, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and occasional disturbance would include physical damage to habitat or nests and burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs. Impacts on wildlife at Oakwood Valley would be long term, minor, and adverse because native hardwood forests and the wildlife associated with this habitat constitute only a small portion of the site.

Under alternative A, no permit system exists for dog walking. At Oakwood Valley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect native hardwood forests at GGNRA park sites such as Oakwood Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Oakwood Valley.

The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit native hardwood forest communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute to cumulative impacts.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Oakwood Valley is uncommon. However, the interim compendium amendment would have a beneficial effect on native hardwood forests by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and dog waste.

The long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any construction projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

OAKWOOD VALLEY ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; occasional disturbance includes physical damage to habitat or nests/ burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitute a very small portion of entire site	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed and would be limited to the Oakwood Valley Fire Road and Oakwood Valley Trail to the junction of the fire road and trail. No dogs would be allowed above the junction of the road and trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, dog waste, and nutrient addition. Physically restraining dogs on leash in the Oakwood Valley site would protect habitat off trail as well as wildlife. Chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior. Wildlife would be occasionally affected by dogs and may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs.

The long-term minor adverse impacts from the high use of dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and by their presence. Even though this habitat and supporting wildlife constitutes a very small portion of entire site, it is considered important native wildlife habitat. Assuming compliance, the overall impact on wildlife from on-leash dog walking at Oakwood Valley would be negligible to long term, minor, and adverse.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect native hardwood forests at GGNRA park sites such as Oakwood Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Oakwood Valley.

The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit native hardwood forest communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute to cumulative impacts.

The negligible to long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. The beneficial effects from the trail rehabilitation projects along with the negligible impacts from any construction actions and the negligible to long-term minor adverse impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

OAKWOOD VALLEY ALTERNATIVE B CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of entire site but is considered important native wildlife habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. For alternative C, a VSCA is proposed along Oakwood Valley Fire Road to the junction with the Oakwood Valley Trail. The VSCA would include double gates at both ends (to reduce dog escapes) and continuous fencing to protect sensitive habitat. On-leash dog walking is proposed on the Oakwood Valley Trail from the junction with the Oakwood Valley Fire Road to the junction with Alta Trail. In general, impacts would be limited to the VSCA, existing trails, and the 6-foot corridors immediately adjacent to the trails (LOD area). Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Wildlife in the LOD area and VSCA would be occasionally to frequently affected by dogs and may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs. The VSCA may also lead to avoidance of the surrounding area by wildlife due to the concentration of dogs and noise as well as the elevated amount of dog waste and scent marking. In addition, the VSCA fencing may prevent wildlife from using the trail at night and when dogs are not present. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high

quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. Therefore, in the LOD area and VSCA, alternative C would result in long-term minor to moderate adverse impacts on wildlife using native hardwood forest and Douglas-fir/coast redwood habitat at Oakwood Valley.

The long-term minor to moderate adverse impacts from dogs in the LOD area and VSCA would occur in a relatively small area when compared to the site as a whole, and the wildlife and supporting habitat constitute a small portion of the entire site. Physically restraining dogs in on-leash areas would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs would still occasionally disturb wildlife; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, the overall impact on wildlife at Oakwood Valley would be negligible to long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative C were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

OAKWOOD VALLEY ALTERNATIVE C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs in on-leash areas would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of entire site; LOD areas and VSCAs are a small portion of the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would only be allowed along the Oakwood Valley Fire Road from Tennessee Valley

Road to the junction with Oakwood Valley Trail, and on Oakwood Valley Trail to the junction with the fire road. The LOD area would include the fire road and the 6 feet of land adjacent to the road. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, dog waste, and nutrient addition. Physically restraining dogs on leash in the Oakwood Valley site would protect habitat off trail as well as wildlife. Chasing after wildlife would be eliminated but on-leash dogs would still occasionally disturb wildlife and wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs.

The long-term minor adverse impacts in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and by their presence. Even though this habitat and supporting wildlife constitutes a very small portion of the site, it is considered important native wildlife habitat. Assuming compliance, the overall impact on wildlife from on-leash dog walking at Oakwood Valley would be negligible to long term, minor, and adverse.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife at the site.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative D were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from any construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. The beneficial effects from the trail rehabilitation projects along with the negligible impacts from any construction actions and the negligible to long-term minor adverse impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

OAKWOOD VALLEY ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site but is considered important native wildlife habitat; the LOD area is a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, though unlike alternative C the VSCA would have non-continuous fencing only where needed. Overall impacts from alternative E would be the same as alternative C, assuming compliance: long term, minor to moderate, and adverse in the LOD area and VSCA and negligible to long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park would be the same as those under alternative B: negligible.

OAKWOOD VALLEY ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash in on-leash areas would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the entire site; LOD areas and VSCAs are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Oakwood Valley Fire Road, and on the Oakwood Valley Trail from the junction with the fire road to the junction with Alta Trail. On-leash dog walking would also be allowed on the short segment of the Rhubarb Trail, which allows visitors from the Tennessee Valley Road community to access to the Oakwood Valley Fire Road without having to drive there. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails (LOD area). Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Wildlife in the LOD would occasionally be affected by dogs and may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. Therefore, in the LOD area, the preferred

alternative would result in long-term minor adverse impacts on wildlife using native hardwood forest at Oakwood Valley.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole, and the wildlife and supporting habitat constitute a small portion of the site. Physically restraining dogs in on-leash areas would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs would still occasionally disturb wildlife. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, the overall impact on wildlife at Oakwood Valley would be negligible to long term, minor, and adverse.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect native hardwood forest at GGNRA park sites such as Oakwood Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Oakwood Valley.

The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit native hardwood forest communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible to long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

OAKWOOD VALLEY PREFERRED ALTERNATIVE F CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs in on-leash areas would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site; LOD areas and VSCAs are a small portion of the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Fort Baker

Alternative A: No Action. Currently, on-leash dog walking is allowed throughout Fort Baker, except that dogs are not allowed on the Chapel Trail or the pier. This site experiences moderate visitor use and low dog walking use, and there were 52 documented leash law violations at this site from 2008 through 2011 and an additional 29 violations between 2012 and 2016 (tables 18a and 18b). Dogs have been observed off leash at the Parade Ground, Drown Fire Road, Battery Yates, and behind the Bay Area Discovery Museum (NPS 2006g).

Under alternative A, impacts on wildlife would include physical damage to habitat or nests and burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs. Because native hardwood forests and the wildlife associated with this habitat constitute only a small portion of the site, the impacts would be considered long term, minor, and adverse under alternative A.

Under alternative A, no permit system exists for dog walking. At Fort Baker, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to wildlife by activities such as controlling invasive plant species and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on wildlife species that inhabit native hardwood forests. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Fort Baker is uncommon. However, the interim compendium amendment would have a beneficial effect on native hardwood forests by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and dog waste.

The long-term minor adverse impacts on wildlife from dogs at Fort Baker under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the projects provided by the park stewardship programs and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

FORT BAKER ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; occasional disturbance includes physical damage to habitat or nests/ burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Drown Fire Road, the Bay Trail (not including Battery Yates Loop), the Vista Point Trail (to be built), the Lodge/Conference Center Grounds, and the Parade Ground. Dogs would not be allowed on the Battery Yates Trail or the Battery Yates Loop as part of this alternative, due to the presence of mission blue butterfly habitat. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, dog waste, and nutrient addition. Chasing after wildlife would be eliminated but on-leash dogs would still occasionally disturb wildlife behavior. Wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs, and displacement to another location is still an impact on wildlife.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on wildlife at Fort Baker would be negligible. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and by their presence.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to wildlife by activities such as controlling invasive plant species and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on wildlife species that inhabit native hardwood forests. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on wildlife from dogs at Fort Baker under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs along with the negligible impacts from any construction actions and the negligible impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

FORT BAKER ALTERNATIVE B CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the entire site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, except for the addition of on-leash dog walking on the Battery Yates Loop. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, dog waste, and nutrient addition. Chasing after wildlife would be eliminated but on-leash dogs would still occasionally disturb wildlife behavior. Wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs, and displacement to another location is still an impact on wildlife. The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on wildlife at Fort Baker would be negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Fort Baker (excluding Drown Fire Road), any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Fort Baker under alternative C were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the park stewardship programs along with the negligible impacts from any construction actions and the negligible impacts on wildlife from alternative c would result in negligible cumulative impacts on wildlife.

FORT BAKER ALTERNATIVE C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the Lodge and Conference Center grounds and on the Bay Trail (excluding the Battery Yates Loop), the Vista Point Trail (to be built), but dogs would be prohibited on the Parade Ground. The LOD area would include 6 feet in each direction from the edges of the trail/grounds. Physically restraining dogs on leash would protect habitat and wildlife off trail, and chasing after wildlife would be eliminated, but on-leash dogs would still infrequently disturb wildlife behavior. Impacts in areas adjacent to the trail/ground would be long term, minor, and adverse as adjacent habitat would be occasionally affected by dogs through trampling, dog waste, and nutrient addition. Because of mobility, wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole, and this habitat and supporting wildlife constitutes a very small portion of the site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and by their presence. Assuming compliance, the overall impact on wildlife at Fort Baker would be negligible.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Fort Baker under alternative D were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the park stewardship programs combined with the negligible impacts from any construction actions and the negligible impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

FORT BAKER ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Fort Baker (excluding Drown Fire Road), any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Impacts on wildlife from permit holders with six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site would be the same those under alternative C: negligible.

FORT BAKER ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Bay Trail, the Lodge/Conference Center Grounds, the Parade Ground, Fort Baker Trail between Sommerville Road and East Road, and the parking lots at the Bay Area Discovery Museum and connecting trails. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, dog waste, and nutrient addition. Chasing after wildlife would be eliminated, but on-leash dogs would still occasionally disturb wildlife behavior. Wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs, and displacement to another location is still an impact on wildlife.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on wildlife at Fort Baker would be negligible. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and by their presence.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits could restrict use by time and area. Walking four to six dogs with an NPS-issued permit would be allowed in all of the same areas except the lands and trails surrounding the Cavallo Point Lodge. Permits could further restrict use by time and area. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park stewardship programs provide indirect benefits to wildlife by activities such as controlling invasive plant species and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on wildlife species that inhabit native hardwood forests. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on wildlife from dogs at Fort Baker under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs along with the negligible impacts from any construction actions and the negligible impacts on wildlife from the preferred alternative would result in negligible cumulative impacts on wildlife.

FORT BAKER PREFERRED ALTERNATIVE F CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

IMPACTS TO WILDLIFE IN RIPARIAN FOREST AND STREAM CORRIDORS BY SITE AND ALTERNATIVE

Wildlife using riparian habitat along wetlands, streams, and creeks in GGNRA include amphibians, reptiles, birds, and mammals that require the specialized habitat associated with stream corridors for all or part of their life. Riparian habitat often supports a high diversity of wildlife species and can provide movement corridors for these species. The sites in GGNRA that possess riparian habitat that supports wildlife species include: Easkoot Creek at Stinson Beach, Redwood Creek at Muir Beach in Marin County, Marin Headlands Trails along the Rodeo Valley Trail Corridor from Rodeo Beach to Capehart Housing, and Lobos Creek at Baker Beach. The area at the Lobos Creek inlet that supports riparian vegetation is generally not used by visitors with dogs and is not affected by this final plan/EIS. At Easkoot Creek, the creek is densely vegetated with riparian plant species and generally difficult to access. Therefore, impacts on riparian vegetation as a result of alternatives A through E at both Lobos Creek at Baker Beach and Easkoot Creek at Stinson Beach would be negligible and are not discussed further in this section. Below and discussed in more detail include the following sites: Muir Beach (Redwood Creek), Marin Headlands Trails (along the Rodeo Valley Trail Corridor from Rodeo Beach to Capehart Housing), and Rancho Corral de Tierra.

MARIN COUNTY SITES

Muir Beach

Alternative A: No Action. The Lower Redwood Creek restoration project restored the channel of Redwood Creek, restored the lagoon, created habitat for sensitive species, removed artificial fill from the floodplain, and removed nonnative species, and planted native riparian and wetland plants. (NPS 2013c). Under alternative A, on-leash dog walking is allowed on the Muir Beach Trail, Kaashi Way from the beach to the Coastal Trail, and the parking lot; dogs are allowed on leash or under voice control on the beach. Redwood Creek and the trail associated with the creek are currently closed to dogs by the NPS to protect sensitive habitat and wildlife species that occur in the watershed, including migrating salmonids (see "Special-status Species" section for a detailed discussion of impacts on coho salmon and steelhead trout). The park has closed the Redwood Creek area, including the trail along Redwood Creek and at the creek crossing near Muir Beach, to people and dogs. Off-leash dogs have frequently been observed in Redwood Creek despite these closures (tables 7a and 7b). A post-and-cable fence installed by the NPS between lower Redwood Creek and the lagoon, also currently closed to dogs, is intended to discourage visitors from accessing the water; however, it does not physically exclude dogs or visitors from the area. Water-dependent amphibians and reptiles found in Redwood Creek that may be affected by current conditions include Pacific tree frogs, California newts, and California giant salamanders.

Under the no-action alternative, if dogs gain access to Redwood Creek they could affect amphibians and reptiles by fouling water with dog waste, trampling plants (habitat) along the water/wetland edges, and disturbing sediment and causing turbidity that can smother egg masses, or by injuring or causing direct mortality to egg masses or individual species in the creek. Other wildlife species, such as birds and small mammals, can usually avoid areas where dogs are present during peak activity or habituate to these activities because of their mobility, but loss of preferred habitat would still indirectly affect wildlife. Off-leash dogs could also chase wildlife, and nesting birds on the ground or in low vegetation could have nests destroyed by dogs wandering off the trail. Therefore, alternative A would result in continued long-term minor adverse impacts on wildlife species at Redwood Creek.

Under alternative A, no permit system exists for dog walking. At Muir Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest and stream corridors at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach.

Additional specific projects that may benefit wildlife in riparian forest and stream corridor habitats include the following: the *Muir Beach Wetland and Creek Restoration Project*, which aims to restore a functional, self-sustaining ecosystem at the tidal lagoon and includes wetland, riparian, and aquatic components to re-create habitat; the *Lower Redwood Creek Interim Flood Reduction Measures and Floodplain/Channel Restoration* project (NPS 2002c, 7), which helped to reduce flooding on Pacific Way

in Muir Beach, maintained passage for federally threatened fish in Redwood Creek, and restored riparian habitat and the floodplain at the GGNRA Banducci site; the *Coho and Steelhead Restoration Project* (NPS 2010f, 1), which focuses on Pine Gulch, Redwood, Olema, and Lagunitas creeks and their watersheds and includes assessments of coho salmon and steelhead abundance and distribution, and the development and implementation of a fish and habitat restoration and monitoring plan; and the *Redwood Creek Watershed: Vision for the Future* project (NPS 2003c, 8), which included identification of issues and values in the watershed and desired future conditions for watershed resources.

Generally, construction and development projects that affect the riparian forest and stream corridor communities require project-specific mitigation measures to address impacts on these communities and their wildlife, such as the GGNRA *Long-range Transportation Plan Update* (NPS 2008g). Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005b, 342-343). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level, and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005b, 94-101). Loss of riparian vegetation could lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005b, 343), which could ultimately affect the fisheries in the stream.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Muir Beach is uncommon. However, the interim compendium amendment would have a beneficial effect on riparian plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and dog waste.

The long-term minor adverse impacts on wildlife from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Redwood Creek closures have been violated by off-leash dogs; wildlife, especially aquatic species, that use the creek and associated riparian habitat along the Muir Beach Trail would occasionally be subjected to impacts from on-leash and voice control dogs through barking and chasing after, wildlife avoidance of areas, and aquatic impacts when dogs gain access to the creek, such as fouling water with dog waste, trampling vegetation, disturbing sediment and causing turbidity, or injuring or causing direct mortality to eggs or individual species in the creek	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking in the parking area, the Muir Beach Trail including the pedestrian bridge, the portion of Kaashi Way from the bridge to the beach, and the beach. Physically restraining dogs on leash would protect habitat and wildlife off trail by eliminating chasing after wildlife. However, dogs could still disturb wildlife behavior. Because of mobility, wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which would indirectly affect wildlife. Therefore, long-term minor adverse impacts on habitat and the associated wildlife located in the 6-foot area adjacent to the trail/path (LOD area) would occur.

Because the trail and the LOD area represent a small portion of the Muir Beach site, the overall impacts would be negligible to long term, minor, and adverse, assuming compliance. The trail generally receives low to high use by dog walkers. Because dogs would be physically restrained and the regulations would be enforced, habitat and wildlife at Redwood Creek would be protected. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid the trail and areas that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and

wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest and stream corridors at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach.

Additional specific projects that may benefit wildlife in riparian forest and stream corridor habitats include the following: the *Muir Beach Wetland and Creek Restoration Project*, which aims to restore a functional, self-sustaining ecosystem at the tidal lagoon and includes wetland, riparian, and aquatic components to re-create habitat; the *Lower Redwood Creek Interim Flood Reduction Measures and Floodplain/Channel Restoration* project (NPS 2002c, 7), which helped to reduce flooding on Pacific Way in Muir Beach, maintained passage for federally threatened fish in Redwood Creek, and restored riparian habitat and the floodplain at the GGNRA Banducci site; the *Coho and Steelhead Restoration Project* (NPS 2010f, 1), which focuses on Pine Gulch, Redwood, Olema, and Lagunitas creeks and their watersheds and includes assessments of coho salmon and steelhead abundance and distribution, and the development and implementation of a fish and habitat restoration and monitoring plan; and the *Redwood Creek Watershed: Vision for the Future* project (NPS 2003c, 8), which included identification of issues and values in the watershed and desired future conditions for watershed resources.

Generally, construction and development projects that affect the riparian forest and stream corridor communities require project-specific mitigation measures to address impacts on these communities and their wildlife, such as the GGNRA *Long-range Transportation Plan Update* (NPS 2008g). Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005b, 342-343). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level, and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005b, 94-101). Loss of riparian vegetation could lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005b, 343), which could ultimately affect the fisheries in the stream.

The negligible to long-term minor adverse impacts on wildlife from dogs at Muir Beach under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid the trail and areas that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; the trail and the LOD area are a small portion of the site; site generally receives low to high use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible to long term, minor, and adverse overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site would be the same those under alternative B: negligible.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid the trail and areas that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; the trail and the LOD area are a small portion of the site; the site generally receives low to high use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would only be allowed on Muir Beach Trail and the parking area, and not on the beach or paths to the beach. Currently, the entire length of the Muir Beach Trail is adjacent to the riparian forest habitat; restoration of the Muir Beach Trail will move it even closer to the riparian habitat. Currently the lagoon and creek are closed to dogs. Physically restraining dogs on leash would protect habitat and wildlife off trail by eliminating chasing after wildlife. However, dogs could still disturb wildlife behavior. Habitat and the associated wildlife located in the 6-foot area adjacent to the trail/path (LOD area) would receive long-term minor adverse impacts related to the presence of dogs affecting the quality and availability of habitat and causing displacement of wildlife in the vicinity of trails. Because of mobility, wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Assuming compliance, overall negligible to long-term minor adverse impacts on wildlife would occur as a result of alternative D because impacts on wildlife would be limited to a small area when compared to the size of the entire site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid the trail and areas that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Muir Beach under alternative D were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid the trail and areas that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; the trail and the LOD area are a small portion of the site; the site receives low to high use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Under alternative E at Muir Beach, the parking area, the Muir Beach Trail including the pedestrian bridge, and the portion of Kaashi Way from the bridge to the beach would be open to on-leash dog walking. The portion of Muir Beach south of the access path would be a designated VSCA, and dogs would be prohibited on the remainder of the beach north of the access path. The VSCA designated as part of this alternative, the short segment of Kaashi Way, and the parking lot are located immediately adjacent to riparian forest. Habitat and the associated wildlife located in the 6-foot area adjacent to the trail/path (LOD area) would receive long-term minor adverse impacts related to the presence of dogs affecting the quality and availability of habitat and causing displacement of wildlife in the vicinity of trails. Because of mobility, wildlife may avoid the trail and areas that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Because the trail and the LOD area represent a small portion of the Muir Beach site, the overall impacts would be negligible to long term, minor, and adverse. The trail generally receives low to high use by dog walkers. Because dogs would be physically restrained in riparian habitat and the regulations would be enforced, habitat and wildlife at Redwood Creek would be protected. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid the trail and other areas that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid the trail and areas that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; the trail and the LOD area are a small portion of the site; the site receives low to high use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the parking area, the Muir Beach Trail including the pedestrian bridge, the beach, and Kaashi Way from the beach to Pacific Way. The tidal lagoon and Redwood Creek would remain closed to dogs, and fencing would be installed along the dunes, the lagoon, and Kaashi Way as needed to protect resources. The riparian forest located adjacent to Muir Beach would be generally protected by physically restraining dogs on leash. Physically restraining dogs on leash would protect habitat and wildlife off trail by eliminating chasing after wildlife. However, dogs could still disturb wildlife behavior. Habitat and the associated wildlife located in the 6-foot area adjacent to the trail/path (LOD area) would receive long-term minor adverse impacts related to the presence of dogs affecting the quality and availability of habitat and causing displacement of wildlife in the vicinity of the trail. Because of mobility, wildlife may avoid the trail and areas that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Assuming compliance, overall negligible to long-term minor adverse impacts on wildlife would occur as a result of the preferred alternative because impacts on wildlife would be limited to a small area when compared to the size of the entire site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid the trail and areas that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest and stream corridors at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach.

Additional specific projects that may benefit wildlife in riparian forest and stream corridor habitats include the following: the *Muir Beach Wetland and Creek Restoration Project*, which aims to restore a functional, self-sustaining ecosystem at the lagoon and includes wetland, riparian and aquatic components to re-create habitat; the *Lower Redwood Creek Interim Flood Reduction Measures and Floodplain/Channel Restoration* project, which helped to reduce flooding on Pacific Way in Muir Beach, maintained passage for federally threatened fish in Redwood Creek, and restored riparian habitat and the floodplain at the GGNRA Banducci site; the *Coho and Steelhead Restoration Project*, which focuses on Pine Gulch, Redwood, Olema, and Lagunitas creeks and their watersheds and includes assessments of coho salmon and steelhead abundance and distribution, as well as the development and implementation of a fish and habitat restoration and monitoring plan; and the *Redwood Creek Watershed: Vision for the Future* project, which included identification of issues and values in the watershed and desired future conditions for watershed resources.

Generally, construction and development projects that affect the riparian forest and stream corridor communities require project-specific mitigation measures to address impacts on these communities and their wildlife, such as the GGNRA *Long-range Transportation Plan Update* (NPS 2008g). Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005b). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005b). Loss of riparian vegetation could lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005b), which could ultimately affect the fisheries in the stream.

The negligible to long-term minor adverse impacts on wildlife from dogs at Muir Beach under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MUIR BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid the trail and areas that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; the trail and the LOD area are a small portion of the site; the site receives low to high use	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Marin Headlands Trails

Alternative A: No Action. Currently, on-leash dog walking is allowed along the Coastal Trail from Hill 88 to Muir Beach, the Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Road, and Marin Drive. Dog walking under voice control (or on leash) is allowed along other portions of the Coastal Trail (Golden Gate Bridge to Hill 88 and includes portions of the Lagoon Loop Trail), the Coastal, Wolf, and Miwok Loop, and the Old Bunker Fire Road Loop (includes a section of the Coastal Trail). These trails experience low to moderate use by dog walkers. Dog-related incidents are high at this site with a total of 269 from 2008 through 2011, with the majority of incidents for having dogs within areas closed to pets and another 232 violations between 2012 and 2016 (tables 17a and 17b). Riparian forest occurs along portions of the Lagoon Loop Trail and the Rodeo Valley Trail is adjacent to riparian forest for much of the length of Rodeo Valley; these areas make up a fair portion of the entire site. Voice control dog walking currently occurs along the Lagoon Loop Trail.

Alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using the riparian community. Off-leash dog access to wildlife and associated riparian habitat along the Lagoon Loop Trail would continue and occasional to frequent disturbance would occur, including physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, amphibians, and ground-nesting birds; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs.

Under alternative A, no permit system exists for dog walking. At Marin Headlands Trails, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially

affect riparian forest and stream corridors at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Generally, construction and development projects that affect the riparian forest and stream corridor communities require project-specific mitigation measures to address impacts on these communities and their wildlife, specifically the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* and the GGNRA *Long-range Transportation Plan Update* (NPS 2008g). Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005b). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level, and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005b). Loss of riparian vegetation could lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005b), which could ultimately affect the fisheries in the stream.

The proposed GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Marin Headlands Trails is uncommon. However, the interim compendium amendment would have a beneficial effect on riparian plant communities by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical disturbance and nutrient addition from dog waste.

The long-term minor to moderate adverse impacts on wildlife from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and the interim permitting program should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be long-term, minor, and adverse.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated riparian habitat along the Rodeo Valley Trail Corridor and the Lagoon Loop Trail would continue; these areas make up a fair portion of the entire site; disturbance would include physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs at the site, which includes the trails throughout the Marin Headlands. Riparian communities and stream corridors, including habitat adjacent to trails and roads of the headlands, would be protected from dog impacts, resulting in no impact on wildlife using riparian communities at Marin Headlands Trails, assuming compliance.

Since dogs would be prohibited from this site, no impacts on wildlife species that use the riparian community would occur from commercial dog walkers.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest and stream corridors at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Generally, construction and development projects that affect the riparian forest and stream corridor communities require project-specific mitigation measures to address impacts on these communities and their wildlife, specifically the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* and the GGNRA *Long-range Transportation Plan Update* (NPS 2008g). Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005b). Work in riparian and streamside areas for the GGNRA *Fire Management*

Plan would be carefully managed to ensure that impacts are mitigated to an acceptable level, and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005b). Loss of riparian vegetation could lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005b), which could ultimately affect the fisheries in the stream.

Under alternative B, the lack of impacts on wildlife from dogs at the Marin Headlands Trails was considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects combined with the negligible impacts from any development or construction actions and the lack of impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor. This corridor extends from the Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via the North Lagoon Loop Trail, Miwok Trail, and Rodeo Valley Trail, and includes the connector trail from the Rodeo Valley Trail to the Smith Road Trailhead. On-leash dog walking would also be allowed on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), and the Batteries Loop Trail. This alternative would allow on-leash dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. The Rodeo Valley Trail Corridor parallels riparian habitat for its entire length. Although only a portion of this trail is currently open to dogs, under alternative C, an additional section in riparian habitat will be opened to on-leash dogs on the multi-use trail and bridge at Capehart Housing in upper Rodeo Valley which will connect the trail corridor to Bunker Road. The habitat and associated wildlife in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor adverse impacts. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which is an indirect impact on wildlife.

Given the amount of riparian habitat and wildlife species that could be impacted along the LOD area and Lower Rodeo Valley Trail Corridor, the overall impacts, assuming compliance, would be expected to be long term, minor, and adverse. Alternative C would actually have more trail length available in this habitat compared to alternative A, but compliance is assumed. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Marin Headlands Trails is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at the Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; more trail length in this habitat available for dog walking compared to alternative A	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would prohibit dogs on trails throughout the Marin Headlands. Riparian communities and stream corridors, including habitat adjacent to trails and roads of the headlands, would be protected from dog impacts, resulting in no impact on wildlife using riparian communities at Marin Headlands Trails, assuming compliance.

Since dogs would be prohibited from this site, no impacts on wildlife species that use the riparian community would occur from commercial or permitted dog walkers.

Cumulative Impacts. Under alternative D, the cumulative impacts on wildlife at this park site would be the same those under alternative B: negligible.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impacts, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Coastal Hiking Trail from Highway 101 along Conzelman Road to the McCullough intersection and then to the Coastal Trail Bike Route, including Julian Road, to the Rodeo Beach parking lot. On-leash dog walking would also be available on the Old Bunker Fire Road Loop (which includes a section of the Coastal Trail), Batteries Loop Trail, North Miwok Trail from Tennessee

Valley to Highway 1, County View Trail, Marin Drive, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow on-leash dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. The Rodeo Lagoon Loop Trail parallels riparian habitat. Only a portion of this trail is currently open to dogs, under alternative E. The habitat and associated wildlife in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor adverse impacts.

Given the amount of riparian habitat and wildlife species that could be impacted along the LOD area and Lagoon Loop Trail, the overall impacts, assuming compliance, would be expected to be long term, minor, and adverse. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Marin Headlands Trails is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at the Marin Headlands Trails under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, which extends from the Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via the North Lagoon Trail, Miwok Trail, Rodeo Valley Trail, and includes the connector trail from the Rodeo Valley Trail to the Smith Road Trailhead. On-leash

dog walking would also be available on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), Batteries Loop Trail, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow on-leash dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. The Rodeo Valley Trail Corridor parallels riparian habitat for its entire length. Although only a portion of this trail is currently open to dogs, under the preferred alternative, an additional section in riparian habitat will be opened to on-leash dogs when the multi-use trail is completed with a bridge at Capehart Housing in upper Rodeo Valley. The habitat and associated wildlife in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in a long-term minor adverse impact in the LOD area and overall. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which is an indirect impact on wildlife.

Given the amount of riparian habitat and wildlife species that could be impacted along the LOD area and Lower Rodeo Valley Trail Corridor, the overall impacts assuming compliance would be expected to be long term, minor, and adverse. The preferred alternative would actually have more trail length in this habitat available for dog walking compared to alternative A, but compliance is assumed. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under the preferred alternative, permits would be issued allowing dog walkers to have more than three dogs on a short segment of the North Lagoon Loop Trail. Allowing dog walkers with more than three dogs on the North Lagoon Loop Trail from the Rodeo Beach parking lot to the pedestrian bridge creates a loop with the permitted areas allowed under the preferred alternative for Rodeo Beach. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest and stream corridors at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Generally, construction and development projects that affect the riparian forest and stream corridor communities require project-specific mitigation measures to address impacts on these communities and their wildlife, specifically the GGNRA *Long-range Transportation Plan Update* (NPS 2008g) and the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (NPS 2009c). Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation

removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005b). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005b). Loss of riparian vegetation could lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005b), which could ultimately affect the fisheries in the stream.

The long-term minor adverse impacts on wildlife from dogs at the Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE F CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; more trail length in this habitat available for dog walking compared to alternative A	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Rancho Corral de Tierra

Alternative A: No Action. Riparian habitat is found along the creeks, streams, and springs at Rancho Corral de Tierra, and trails cut across riparian forest in some areas. Currently, on-leash dog walking is allowed at Rancho Corral de Tierra. Staff regularly working at Rancho characterize use by dog walkers as moderate overall with moderate to high use in the Montara area. At Rancho, NPS rangers have observed off-leash dogs running in areas with potentially sensitive habitat.

Alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using the riparian community. Off-leash dog access to wildlife and associated riparian habitat along the trails would continue and occasional to frequent disturbance would occur, including physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, amphibians, and ground-nesting birds; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs. According to information from the Montara Dog Group and subsequent staff observations, dog walkers, particularly off-leash dog walkers, primarily use the lower elevations of the site at both the Montara and El Granada areas. The terrain at El Granada is particularly steep and challenging, thus dog walking use in that area appears to be concentrated mostly in the lower

elevations. Although the Montara area is less steep, visitor use there is similarly concentrated in the lower elevations, but some dog walkers in the Montara area do use trails that connect to the top of the Rancho site.

No permit system exists for dog walking under alternative A. Commercial dog walkers typically use the El Granada area off of Coral Reef Avenue; however, commercial dog walking is considered a low use at the site overall. Therefore, commercial dog walking would have negligible impacts on wildlife using riparian forest at Rancho.

Cumulative Impacts. Projects and actions in and near Rancho were considered for the cumulative impacts analysis (appendix K). Since the Rancho Corral de Tierra site has been transferred to the NPS, general maintenance and protection of the site and associated natural resources have been occurring, although some impacts may remain from prior unregulated off-leash dog walking.

Additional actions have had, or are currently having, or will have the potential to have adverse impacts on wildlife at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involves constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica and Montara (County of San Mateo 2016d, 1). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The long-term minor to moderate adverse impacts on riparian forest from dogs at Rancho Corral de Tierra under alternative A were considered together with the effects of the actions mentioned above. The benefits to wildlife from the park stewardship programs would not be expected to completely reduce the adverse impacts of this alternative. Therefore, the beneficial effects from the park stewardship programs combined with the long-term minor to moderate adverse impacts from alternative A would result in long-term minor adverse cumulative impacts on the riparian forest.

RANCHO CORRAL DE TIERRA ALTERNATIVE A CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Creek and waterbodies are closed to dogs by the NPS, but there is no physical barrier and off-leash dogs have been observed at this site; this habitat would continue to be subject to impacts from dogs through trampling, digging, and dog waste	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. On-leash dog walking would be allowed on designated trails in two areas open to dog walking near Montara and El Granada, which were identified by the local dog walking group as key areas for this use. Creeks and waterbodies at Rancho would remain closed to dogs. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. The habitat and associated wildlife in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in a negligible to long-term minor adverse impact in the LOD area and overall.

Wildlife may avoid trail corridors that allow on-leash dog walking and may be displaced from high quality habitat that is degraded by the presence of dogs, which is an indirect impact on wildlife.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking at Rancho is not common, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on wildlife using riparian forest at Rancho.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife using riparian vegetation from dogs at Rancho under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the rehabilitation and improvement projects combined with the long-term minor adverse impacts from alternative B would result in negligible cumulative impacts on wildlife using riparian forest at Rancho.

RANCHO CORRAL DE TIERRA ALTERNATIVE B CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Creeks and waterbodies would remain closed to dogs; physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed on designated trails in two areas open to dog walking near Montara and El Granada. Dog walking under voice and site control would be allowed in a VSCA located between Le Conte and Tamarind Street, in a previously (partially) disturbed open area across the street and east of the Farallone View School. The VSCA would not be located within riparian forest vegetation; creeks and waterbodies at Rancho would remain closed to dogs. Therefore, impacts to wildlife that use riparian forest under alternative C would be the same as alternative B: overall negligible to long-term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Rancho, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on wildlife using riparian forest at Rancho.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife using riparian forest at Rancho would be the same as those under alternative B: negligible cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE C CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Creeks and waterbodies would remain closed to dogs; physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed in the Montara area on two existing trails that allow dog walking: Old San Pedro Mountain Road and the Farallon Cutoff. Dogs would be prohibited in other areas of the site, including the entire El Granada area. Creeks and waterbodies at Rancho would remain closed to dogs. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. The habitat and associated wildlife in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in a negligible to long-term minor adverse impact in the LOD area and overall. Wildlife may avoid trail corridors that allow on-leash dog walking and may be displaced from high quality habitat that is degraded by the presence of dogs, which is an indirect impact on wildlife.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, no impact would occur as a result of commercial or permitted dog walking.

Cumulative Impacts. Under alternative D, the cumulative impacts on wildlife using riparian forest at Rancho would be the same as those under alternative B: negligible cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE D CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Creeks and waterbodies would remain closed to dogs; physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Dog walking restrictions under alternative E would be the same as under alternative C and impacts on wildlife using riparian forest would be the same: overall negligible to long-term minor adverse impacts, assuming compliance.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Rancho, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on wildlife using riparian forest at Rancho.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife using riparian forest at Rancho would be the same as those under alternative B: negligible cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE E CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Creeks and waterbodies would remain closed to dogs; physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on designated trails in three areas. Trails in Montara include Old San Pedro Mountain Road, LeConte Trail, Corona Pedro Trail, and Farallon Cutoff from the park boundary in the west to the intersection with Corona Pedro Trail. On-leash trails in the El Granada area include the Denniston Ridge Trail between the San Carlos Trail and its intersection with the Clipper Ridge Trail, the Clipper Ridge Trail, the Memorial Loop, the Almeria Trail, and the San Carlos Trail. In the Moss Beach area, on-leash dog walking would be allowed on the Vincente Ridge and Ranchette. The preferred alternative would also establish a VSCA at Flat Top, a former quarry site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. The habitat and associated wildlife in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in a negligible to long-term minor adverse impact in the LOD area and overall. Wildlife may avoid trail corridors that allow on-leash dog walking and may be displaced from high-quality habitat that is degraded by the presence of dogs, which is an indirect impact on wildlife.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Rancho, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative F would have negligible impacts on wildlife using riparian forest at Rancho.

Cumulative Impacts. Projects and actions in and near Rancho were considered for the cumulative impacts analysis (appendix K). Since the Rancho Corral de Tierra site has been transferred to the NPS, general maintenance and protection of the site and associated natural resources have been occurring, although some impacts may remain from prior unregulated off-leash dog walking.

The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites. Additional actions have had, are currently having, or will have the potential to have adverse impacts on vegetation at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involves constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica and Montara (County of San Mateo 2016d, 1). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The negligible to long-term minor adverse impacts on wildlife using riparian forest from dogs at Rancho Corral de Tierra under the preferred alternative were considered together with the effects of the actions mentioned above. The beneficial effects from the park stewardship programs combined with the long-term, minor, adverse impacts under the preferred alternative would result in negligible cumulative impacts on wildlife using riparian forest at Rancho.

RANCHO CORRAL DE TIERRA PREFERRED ALTERNATIVE F CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Creeks and waterbodies would remain closed to dogs; physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts

IMPACTS TO WILDLIFE IN OTHER CONIFEROUS COMMUNITIES BY SITE AND ALTERNATIVE

As stated previously, stands of the non-native tree Monterey cypress are found within GGNRA, including at East Fort Miley, Lands End, and several locations at Rancho Corral de Tierra. East Fort Miley is primarily Monterey cypress with some wetland/riparian vegetation around the fringes; the area is dominated by older stands of cypress, which were densely planted and impacts are discussed further in the paragraphs that follow. Lands End and Rancho Corral de Tierra both have smaller stands of Monterey cypress that are not considered the dominant habitat at these sites. Therefore, impacts from dogs on other coniferous communities (Monterey cypress) at Lands End and Rancho Corral de Tierra for all alternatives would be negligible and are not discussed further in this "Wildlife" section.

Fort Miley

Alternative A: No Action. Dogs under voice control are currently allowed in both East and West Fort Miley; much of the West Fort Miley site is paved and the primary dog-accessible location at East Fort Miley is the open area north of NPS maintenance and picnic areas. East Fort Miley is primarily Monterey cypress with some wetland/riparian vegetation around the fringes; the area is dominated by older stands of cypress, which were densely planted. Dark-eyed juncos, California towhees, song sparrows, white-crowned sparrows, and spotted towhees may use the forested habitat at Fort Miley for nesting and foraging. Raccoons, red foxes, and skunks are probably present and feral cats are common in the vicinity of the Navy Memorial parking lot and Fort Miley; coyotes may be establishing a den in the Fort Miley area. This site has documented moderate to high visitor use (mostly picnickers) and low numbers of dog walkers. This site is mostly used by local residents and no dog-related incidents were reported from 2008 through 2011.

Under alternative A, since dogs would continue to be allowed off leash, it is likely that dogs would enter areas off the trail and picnic areas that support the growth of existing vegetation. A large portion of the site is developed and only a small portion of the entire site supports coniferous vegetation in areas that are open to dogs. However, alternative A would result in continued long-term minor adverse impacts on wildlife using the coniferous community. Off-leash dog access to wildlife and associated coniferous habitat would continue and occasional disturbance to upland wildlife species would occur, including physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, amphibians, and ground-nesting birds.

Under alternative A, no permit system exists for dog walking. At Fort Miley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Miley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Fort Miley. As part of a U.S. Department of Veterans Affairs project, a new parking structure for the San Francisco Veterans Administration (VA) Medical Center patient and visitor parking would be constructed immediately to the west of East Fort Miley (USVA 2010, 10). However, the environmental assessment (EA) for the project determined that due to the disturbed nature of the site and its relatively small size, no long-term impacts to vegetation or wildlife were anticipated.

Therefore, the long-term minor adverse impacts on wildlife from dogs at Fort Miley under alternative A were considered together with the beneficial effects of the projects mentioned above. Cumulatively, there would be negligible impacts on wildlife from alternative A when added to other past, present, or foreseeable future actions at and around this park site.

FORT MILEY ALTERNATIVE A CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Off-leash dog access to wildlife would continue; these areas make up a small portion of the entire site; occasional disturbance would include physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs at the site. Therefore, no impacts on wildlife from dogs at this site would occur because dog use would be eliminated. Wildlife disturbance would no longer occur at Fort Miley.

Since dogs would be prohibited from this site, no impacts on wildlife species that use the coniferous community would occur from commercial dog walkers.

Cumulative Impacts. Projects and actions in and near Fort Miley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Fort Miley. As part of a U.S. Department of Veterans Affairs project, a new parking structure for the San Francisco VA Medical Center patient and visitor parking would be constructed immediately to the west of East Fort Miley (USVA 2010, 10). However, the EA for the project determined that due to the disturbed nature of the site and its relatively small size, no long-term impacts to vegetation or wildlife were anticipated.

Under alternative B, the lack of impacts on wildlife from dogs at the Fort Miley was considered together with the effects of the projects mentioned above. The beneficial effects from projects described above combined with the negligible impacts from any development or construction actions and the lack of impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

FORT MILEY ALTERNATIVE B CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed in a trail corridor created on the east side of East Fort Miley. This alternative would prohibit dogs in West Fort Miley. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trail. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, dog waste, and nutrient addition. Chasing after wildlife would be eliminated but on-leash dogs would still

occasionally disturb wildlife behavior. Wildlife may avoid habitat that is degraded by the presence of dogs, and displacement to another location is an impact on wildlife. At Fort Miley, the long-term minor adverse impacts from the use of dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and their presence. The overall impact on wildlife from on-leash dog walking at Fort Miley would be negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Fort Miley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Fort Miley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Fort Miley under alternative C were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from projects described above combined with the negligible impacts from any development or construction actions and the negligible impacts on wildlife from alternative C would result in negligible cumulative impacts on wildlife.

FORT MILEY ALTERNATIVE C CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid areas that allow on-leash dog walking and be displaced from habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitutes a very small portion of entire site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impacts on wildlife from dogs at this site would occur, because dog use would be eliminated. Wildlife disturbance would no longer occur at Fort Miley.

Since dogs would not be allowed on the trails at Fort Miley, there would be no impact from commercial dog walkers to wildlife.

Overall, no impact on wildlife would result from the new dog regulations under alternative D.

Cumulative Impacts. Under alternative D, the lack of impacts on wildlife from dogs at the Fort Miley was considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from projects described above combined with the negligible impacts from any development or

construction actions and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

FORT MILEY ALTERNATIVE D CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Under alternative E, on-leash dog walking would be allowed on the Old Roadway in West Fort Miley. On-leash dog walking would also be allowed in the east side trail corridor in East Fort Miley, adjacent to the coniferous community. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails (LOD area). Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, dog waste, and nutrient addition, resulting in long-term minor adverse impacts on wildlife in the LOD area. Wildlife in the LOD area would occasionally be affected by dogs. Wildlife may avoid and/or be displaced from high-quality habitat that is degraded by the presence of dogs. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from habitat that is degraded by the presence of dogs would indirectly affect wildlife. Therefore, in the LOD area, alternative E would result in long-term minor adverse impacts on wildlife using the coniferous community at Fort Miley.

At Fort Miley, the long-term minor adverse impacts from the use of dogs in the LOD area represent a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and their presence. The overall impact on wildlife from on-leash dog walking at Fort Miley would be negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Fort Miley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Fort Miley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Fort Miley under alternative E were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from projects described above combined with the negligible impacts from any development or construction actions and the impacts on wildlife from alternative E would result in negligible cumulative impacts on wildlife.

FORT MILEY ALTERNATIVE E CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs in on-leash areas would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of entire site; LOD area and VSCA areas are a small portion of the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative C: on-leash dog walking would be allowed in a trail corridor created on the east side of East Fort Miley. The preferred alternative would prohibit dogs in West Fort Miley. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trail. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, dog waste, and nutrient addition. Chasing after wildlife would be eliminated but on-leash dogs would still occasionally disturb wildlife behavior. Wildlife may avoid habitat that is degraded by the presence of dogs, and displacement to another location is an impact on wildlife.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Fort Miley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Fort Miley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

At Fort Miley, the long-term minor adverse impacts from the use of dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and their presence. The overall impact on wildlife from on-leash dog walking at Fort Miley would be negligible.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Fort Miley under the preferred alternative were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from projects described above combined with the negligible impacts from any development or construction actions and the negligible impacts on wildlife from the preferred alternative would result in negligible cumulative impacts on wildlife.

FORT MILEY PREFERRED ALTERNATIVE F CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid areas that allow on-leash dog walking and be displaced from habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitutes a very small portion of entire site	Beneficial, assuming compliance	Negligible cumulative impacts

SPECIAL-STATUS SPECIES

As stated previously in chapter 3, special-status species are plants and animals that are legally protected under the state and federal ESA of 1973 or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such status. Additional federal regulations protect endangered and threatened wildlife species, including the *Fish and Wildlife Coordination Act* of 1934 (as amended), the *Bald and Golden Eagle Protection Act*, the *Marine Mammal Protection Act*, and the *Migratory Bird Treaty Act*. These acts are discussed in more detail in the paragraphs that follow. The California ESA (administered by the Department of Fish and Wildlife) does not supersede the federal ESA, but operates in conjunction with it to provide additional protection to threatened and endangered species in California, as well as species that are not protected through federal regulations. In addition to threatened and endangered state-listed species, the Department of Fish and Wildlife maintains an informal list of plant and wildlife species of special concern because of population declines and restricted distributions, and/or because they are associated with habitats that are declining in California. The CNPS has also developed lists of plants of special concern in California. Although federal agencies are not required to comply with the California Fish and Game Code, the NPS makes every reasonable effort to conduct its actions in a manner consistent with relevant state laws and regulations. In this section, impacts on federally and state-listed threatened and endangered species as well as candidate species are analyzed. Due to the extensive numbers of additional plant and wildlife species included on lists produced by the CNPS and the California Department of Fish and Wildlife, impacts on these species are analyzed in the "Vegetation" and "Wildlife" sections. However, these species are still given equal consideration for analysis in this final plan/EIS compared to federally and state-listed species discussed in this section. Federally and state-listed plant species are discussed in the following sections when the listed species or potential habitat exists at specific GGNRA sites in areas that allow dogs. Although habitats at GGNRA support many special-status species, only those species potentially affected by this final plan/EIS are discussed in this section. Additionally, any impacts on designated critical habitat are also evaluated in this section.

This section provides an overview of the guiding policies and regulations, describes the study area, includes a definition of duration, details the assessment methodology, and defines the impact thresholds

for special-status species. This section then provides a detailed, species-specific impact analysis for each alternative and each site in the alternative. It is important to note that only those federally and state-listed species that are present and affected by this project are included in the discussions of this section.

GUIDING POLICIES AND REGULATIONS

Federal Laws and Regulations

Endangered Species Act. The USFWS and National Oceanic and Atmospheric Association (NOAA) Fisheries have jurisdiction over species formally listed as threatened or endangered under the ESA (16 USC 1531–1544). The USFWS has interpreted the definition of "harm" to include significant habitat modification. An activity may be defined as a take even if it is unintentional or accidental. An endangered species is one that is considered in danger of becoming extinct throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future. In addition to endangered and threatened species, which are legally protected under the ESA, there are lists of candidate species for which the USFWS currently has enough information to support a proposal for listing as threatened or endangered species.

Section 7 of the ESA outlines procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat. The NPS is required to consult with USFWS or NOAA Fisheries to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species. This consultation may be either informal or formal consultation. Under a formal consultation, either USFWS or NOAA Fisheries issues a biological opinion. The biological opinion generally authorizes some level of incidental take and details the reasonable and prudent measures that the action agency needs to implement to ensure that critical habitat is not destroyed or degraded and that a listed species is not jeopardized by the federal action. Section 9 of the ESA prohibits the "take" of federally listed species, which is broadly defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct."

Migratory Bird Treaty Act. The *Migratory Bird Treaty Act*, which was first enacted in 1918, implements a series of treaties between the United States and Great Britain (on behalf of Canada), Mexico, Japan, and Russia, which provide for international migratory bird protection and authorize the Secretary of the Interior to regulate the take of migratory birds. There is a list of bird species that are protected by the *Migratory Bird Treaty Act*. The act makes it unlawful, except as allowed by regulations, "at any time, by any means, or in any manner, to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird, included in the terms of conventions" with certain other countries (16 USC 703). This includes direct and indirect acts, although harassment and habitat modification are not included unless they result in the direct loss of birds, nests, or eggs. All the bird species at GGNRA discussed in chapter 3 are protected under the *Migratory Bird Treaty Act*, with the exception of starlings, pigeons, crows, and game birds.

Executive Order 13186—Responsibilities of Federal Agencies to Protect Migratory Birds. This executive order directs executive departments and agencies to take certain actions to further implement the *Migratory Bird Treaty Act*. This executive order creates a more comprehensive strategy for the conservation of migratory birds by the federal government, and fulfills the government's duty to lead in the protection of this international resource. This executive order also provides a specific framework for the federal government's compliance with its treaty obligations to Canada, Mexico, Russia, and Japan and provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance in memoranda of understanding. For example, the executive order aids in incorporating national planning for bird conservation into agency programs and provides the formal presidential guidance necessary for agencies to incorporate migratory bird conservation more fully into their programs.

Marine Mammal Protection Act. The *Marine Mammal Protection Act*, which was most recently reauthorized in 1994 (16 USC 1361 et seq.), establishes a moratorium, with certain exceptions, on the take of marine mammals in U.S. waters. The term "take" is statutorily defined as "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal." "Harassment" is defined under the 1994 amendments as any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption to behavioral patterns, including but not limited to migration, breathing, nursing, breeding, feeding, or sheltering. All the marine mammal species at GGNRA discussed in chapter 3 are protected under the *Marine Mammal Protection Act*.

Magnuson-Stevens Fishery Management and Conservation Act. The *Magnuson-Stevens Fishery Conservation and Management Act*, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires all federal agencies to consult with NOAA Fisheries on all actions or proposed actions allowed, funded, or undertaken by the agency that may adversely affect essential fish habitat. Essential fish habitat is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical, and biological properties. Substrate includes sediment underlying the waters. Necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem.

NPS Natural Resource Policies and Guidelines

The NPS has developed specific guidelines for the management of natural resources (NPS 2002d). The guidelines provide for the management of native and non-native plant and animal species. The *Natural Resource Reference Manual #77,* offers comprehensive guidance for NPS employees responsible for managing, conserving, and protecting the natural resources found in national park system units. This manual replaces the NPS-77 *The Natural Resource Management Guideline*, issued in 1991 under previous guideline series. To date, 16 of the 42 sections of NPS-77 have been revised.

The NPS *Management Policies 2006* direct park managers to preserve natural resources, processes, systems, and values of park units in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them (NPS 2006a, Section 4.1). Additionally, the *Organic Act* of 1916 (54 USC 100101(a), 100301 et seq.) commits the NPS to making informed decisions that perpetuate the conservation and protection of park resources unimpaired for the benefit and enjoyment of future generations, as described in detail in chapter 1.

State Laws and Regulations

California Endangered Species Act. Pursuant to the California ESA, which is administered by the California Department of Fish and Wildlife, state-listed threatened or endangered species are protected from any take (California Code of Regulations, title 14, Sections 670.2 and 670.5; California ESA, Section 2080). The state ESA is similar to the federal ESA both in process and substance; it is intended to provide additional protection to threatened and endangered species in California. The California ESA does not supersede the federal ESA, but operates in conjunction with it. Species may be listed as threatened or endangered under both acts (in which case the provisions of both state and federal laws apply) or under only one act (Mueller 1994). The take of state-listed species incidental to otherwise lawful activities requires an incidental take permit.

California Native Plant Protection Act. In addition to the California ESA, the *California Native Plant Protection Act* provides protection to endangered and rare plant species, subspecies, and varieties of wild native plants in California. The definitions of "endangered" and "rare" closely parallel the definitions of "endangered" and "threatened" plant species in the California ESA. The *California Native Plant*

Protection Act lists are used by both the California Department of Fish and Wildlife and the USFWS when considering formal species protection under the ESA and the California ESA. The CNPS has created five lists in an effort to categorize degrees of concern: List 1A (Plants Presumed Extinct in California), List 1B (Plants Rare, Threatened, or Endangered in California and Elsewhere), List 2 (Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere), List 3 (Plants about Which We Need More Information: A Review List), and List 4 (Plants of Limited Distribution: A Watch List). The California Department of Fish and Wildlife considers all plants listed by the CNPS as "special plants" and recommends that impacts on plants on lists 1 and 2 be considered during project analysis.

California Fish and Game Code, Protection of Birds. The California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird (Section 3503). Specifically, it is unlawful to take, possess, or destroy any raptors (i.e., eagles, hawks, owls, and falcons), including their nests or eggs (Section 3503.5). The code adopts the provisions of the *Migratory Bird Treaty Act* and states that it is unlawful to take or possess any designated migratory nongame bird or any part of such migratory nongame bird (Section 3513). The state code offers no statutory or regulatory mechanism for obtaining an incidental take permit for the loss of nongame migratory birds. Typical violations include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of the code could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction.

Informal Species Designations

Both the federal and state governments maintain lists of species that are not legally protected but are species that may be rare enough to qualify for listing under the respective ESAs. In addition, the CNPS maintains a list of species in California that are considered rare or endangered according to their criteria and the California Department of Fish and Wildlife maintains an informal list of plant and wildlife species of special concern because of population declines and restricted distributions, and/or because they are associated with habitats that are declining in California. The species listed by these agencies are defined as other species of interest and require consideration by the NPS when management actions are taken to ensure that actions do not harm the species or their habitats. Impacts associated with other species of interest at GGNRA are described in the "Vegetation" and "Wildlife" sections in this chapter.

STUDY AREA

The geographic study area for special-status species includes the individual sites of GGNRA under consideration for this final plan/EIS that could be impacted by dog management activities. There are 22 individual sites relevant to this project, which have been previously described in detail in chapter 3.

DURATION OF IMPACT

Duration describes the length of time an effect would occur, either short term or long term. Long term impacts to special-status species are described as those persisting for the life of the plan/EIS (the next 20 years). After the implementation of the plan, a 1- to 3-month period of public education would occur to implement the proposed action followed by a 1- to 3-month period testing the monitoring-based management program. At the beginning of the education and enforcement period, short-term impacts on all natural resources would occur, regardless of the alternative chosen. During this period, impacts on special-status species would be similar to the current conditions and would be short-term. Following the education period, monitoring for compliance would begin and it is expected that compliance with the dog walking regulations and associated adverse impacts would improve gradually and the impacts on special-status species would then become long term, as described below for each alternative.

ASSESSMENT METHODOLOGY

The impact analysis for special-status species includes qualifying habitat types that would be lost or restored, and discussing other potential direct and indirect effects. For the purposes of this document, special-status species addressed in this section include federally and state-listed threatened and endangered species and candidate species as described in the following paragraphs. Impacts on designated critical habitat are also evaluated. Habitat loss or restoration is based on an analysis of vegetation changes. Potential impacts that could occur beyond the limit of direct project disturbance, including those that may not be related to habitat loss, are discussed on a qualitative basis.

The information in this analysis is obtained through best professional judgment of park staff, experts in the field, recovery plans and actions for listed species, ongoing data collection for other projects, and other supporting literature (as cited in the text). NPS observations and anecdotal evidence at GGNRA are also included and described by site, when available. Impacts on special-status species were assessed in terms of changes in the amount and connectivity of special-status species habitat, integrity of the habitat (including past disturbance) and populations, and the potential for increased/decreased disturbance and number of individuals. The park would adhere to any additional measures required by a biological opinion issued by the USFWS (if applicable and in accordance with Section 7 of the ESA) beyond those described in this document. For all listed species, proposed actions would be conducted under the terms and conditions of the biological opinion issued by the USFWS and NOAA Fisheries.

SPECIAL-STATUS SPECIES IMPACT THRESHOLDS

The following impact thresholds were established to determine the magnitude of effects on special-status species and their associated habitat (including designated critical habitat) that would result from implementation of the various alternatives being considered. Primary steps in assessing impacts on special-status species were taken to determine:

- which species and supporting habitat are found in areas likely to be affected by dog management described in the alternatives;
- any habitat loss or alteration caused by the alternatives; and
- the displacement and/or disturbance potential of the actions, as well as the potential for the species and suitable or supporting habitat to be affected by the alternatives.

Intensity of Impact

Intensity describes the degree of the effect on special-status species; federally and state-listed threatened and endangered species are addressed together in this section. The intensity of impact is species-specific and related to population size and distribution in the park and regionally. The environmental consequences for federal threatened and endangered species are described in a way that meets the requirements of the NEPA and the ESA. Definitions for impact conclusions required for Section 7 ESA consultation are presented below:

No effect:	A proposed action would not affect a federally listed species, candidate species, or designated critical habitat.
May affect, not likely to adversely affect:	Effects on federally listed or candidate species would be discountable (i.e., extremely unlikely to occur and not able to be meaningfully measured, detected, or evaluated) or would be beneficial.

May affect, likely to adversely affect: Adverse effects on a federally listed or candidate species may occur as a direct or indirect result of proposed actions and the effects would be either not discountable or not beneficial.

Likely to jeopardize proposed species or adversely modify proposed critical habitat (impairment): The appropriate conclusion when the NPS or the USFWS identifies situations in which the proposal could jeopardize the continued existence of a federally listed or candidate species or adversely modify critical habitat for a species within or outside park boundaries.

Impacts were determined by examining the potential effects of dog walking activities on special-status species, their habitats, or the natural processes sustaining them as well as responses to disturbance by dogs. For the action alternatives, on-leash dog walking impacts were based on an allowed 6-foot dog leash. Since dog walkers may walk along the edge of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in a LOD area for special-status species and their habitat that would extend 6 feet out from the edges of the fire road or trails. The intensity of each adverse impact is judged as having a minor, moderate, or major effect. A beneficial impact would be a positive change for special-status species. Negligible impacts are neither adverse nor beneficial, nor long term nor short term. No impact on special-status species may also be applicable for some alternatives and sites if dogs are prohibited; for federally listed species, this impact intensity would equate to a determination of "no effect." The following impact threshold definitions are used to describe the severity and magnitude of changes to federally and state-listed species under each of the alternatives. Each threshold definition references the ESA determinations described above, where applicable.

Beneficial A beneficial impact is a beneficial change from the current conditions and is a relative indicator of progress compared to the no-action alternative. In general, a beneficial impact would be an increase in the viability of the species if species-limiting factors (e.g., habitat loss, competition, and mortality) are reduced and if species resilience is enhanced through improving habitat integrity. For federally listed species, this impact intensity would equate to a determination of "may affect, not likely to adversely affect."

Negligible Impacts would result in no measurable or perceptible changes in individuals of a species or its habitat (including critical habitat as designated under the ESA). For federally listed species, this impact intensity would equate to a determination of "may affect, not likely to adversely affect."

Adverse **Minor**. Impacts would result in measurable or perceptible changes in individuals of a species or its habitat, but would be localized in a relatively small area. The reproductive success of individuals of a species would not be affected. Adverse impacts may include occasional disturbance to individuals or avoidance of certain areas, although essential features of critical habitat would not be impacted. For federally listed species, this impact intensity would equate to a determination of "may affect, likely to adversely affect."

Moderate. Impacts would result in measurable and/or consequential changes in individuals of a species or its habitat; however, the impact would remain relatively localized. The reproductive success of individuals of a species would be affected, but the species itself would not be permanently lost. Adverse impacts may include frequent disturbance or avoidance of certain areas or injury or mortality of individuals, but the long-term viability of the species would be maintained. Essential features of critical habitat may be impacted. For federally listed species, this impact intensity would equate to a determination of "may affect, likely to adversely affect."

Major. Impacts would result in measurable and/or consequential changes to a large number of individuals of a species or a large area of its habitat. These changes would be substantial, highly noticeable, and permanent, occurring over a widespread geographic area, resulting in a loss of species viability. Adverse impacts may include frequent and repeated disturbance or injury or mortality of individuals to the point that the long-term viability of the species would be compromised. Essential features of critical habitat would be impacted. In extreme adverse cases, effects would be irreversible and the species may be extirpated from the park. For federally listed species, this impact intensity would equate to a determination of "likely to jeopardize proposed species or adversely modify proposed critical habitat (impairment)."

It is important to note that dogs are viewed as a contributing factor to impacts associated with special-status species and the total elimination of dogs in the park would still leave disturbance effects on special-status species by other factors, such as visitors without dogs who would continue to visit the park and use the trails/roads. Disturbance by visitors and their activities (including associated equipment) as well as by dogs has been occurring and currently occurs in GGNRA as an existing condition. However, on a relative scale, visitors with dogs could impact special-status species to a greater extent than visitors without dogs. The impacts analysis describes species-specific impacts on special-status species by alternative and site.

CUMULATIVE SPECIAL-STATUS SPECIES IMPACTS COMMON TO ALL ALTERNATIVES

The impacts analysis, which describes species-specific impacts on special-status species by alternative and site, is followed by a discussion of cumulative impacts as a result of each alternative and site. Generally, past actions that have influenced special-status species at GGNRA are urban development and loss of habitat continuity, the establishment of an overall dominance by non-native plant species, and fire suppression. Other ongoing programs being completed both in the park and on private lands and lands managed by other agencies adjacent to GGNRA-managed lands in the park are considered in the cumulative impacts discussion for each species.

FEDERALLY AND STATE-LISTED WILDLIFE SPECIES

At GGNRA, for new and/or pending properties recently acquired by the park (Cattle Hill), inventorying of listed and unique wildlife species is currently ongoing. Therefore, potential habitat is identified at these sites because site-specific information concerning listed plant species at these locations was relatively unknown at the time of this document's publication.

IMPACTS TO SAN BRUNO ELFIN BUTTERFLY (FEDERALLY ENDANGERED) BY SITE AND ALTERNATIVE

The larval host plant for the San Bruno elfin butterfly is sedum, a succulent plant that grows on rocky north-facing slopes along the coast (coastal scrub) (Newby 2000). San Bruno elfin butterflies are closely tied to sedum host plants, where they lay their eggs and where larvae develop; the adults emerge for only a short period. Existing San Bruno elfin butterfly populations occur in known colonies of sedum only at Milagra Ridge, on rocky outcrops that are relatively inaccessible to people and dogs (NPS 2005c).

Milagra Ridge

Alternative A: No Action. Dogs are currently allowed on leash on all trails and the fire road at Milagra Ridge. Both the road and the trails traverse habitat that could support the host sedum species of the San Bruno elfin butterfly at rocky outcrops in coastal scrub habitat at this site. This site has documented low visitor use by bicyclists, walkers, and hikers, and high visitor use by dog walkers (table 10). Leash law violations totaled 35 from 2008 through 2011 and an additional 10 violations between 2012 and 2016 (tables 28a and 28b). Because the population of the San Bruno elfin butterfly is small and isolated, it is potentially susceptible to threats and stochastic events (random or rare), but such events are unlikely due to the relative inaccessibility of the habitat that supports this species in relation to trails at Milagra Ridge. Historical use of this area shows no indication that either the host plant or the butterfly is being affected by dogs on the trails and roads.

Therefore, alternative A would result in negligible impacts on the San Bruno elfin butterfly because no measurable or perceptible change in the population or habitat of the San Bruno elfin butterfly would be expected from this alternative. Impacts would be localized and could constitute a permanent loss if San Bruno elfin butterfly eggs or larvae are present on vegetation in or along a trail that is disturbed by dogs. However, it is unlikely that direct impacts on individuals of this butterfly would occur from dogs as a result of this alternative because of the relative inaccessibility of the habitat in relation to trails and because dogs are required to be on leash for alternative A.

Under alternative A, no permit system exists for dog walking. At Milagra Ridge, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the San Bruno elfin butterfly.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs would have the potential to affect the San Bruno elfin butterfly and its habitat in San Mateo County. Since San Bruno elfin butterfly habitat in the park is mapped and monitored on a regular basis, the habitat would be considered and avoided during in-park projects and operations, particularly since it occurs primarily in relatively inaccessible patches on rocky outcrops at Milagra Ridge. Other ongoing programs, including non-native plant removal projects in the park as well as Wildland/Urban Interface Initiative projects on adjacent parklands, may result in beneficial effects by preventing non-native vegetation from displacing San Bruno elfin butterfly habitat. The objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species; therefore, this plan should provide beneficial effects to the San Bruno elfin butterfly. Additionally, the site management plan for Milagra Ridge includes a statement to protect and enhance the habitat of the mission blue butterfly in coordination with GGNRA (NPS) and USFWS. Although habitat restoration as a result of the plans mentioned above has focused on the mission blue butterfly, the plans should both provide beneficial effects to the San Bruno elfin butterfly as well, through protection of existing butterfly habitat.

The negligible impacts on the San Bruno elfin butterfly under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration projects combined with the negligible impacts from alternative A would result in negligible cumulative impacts on the San Bruno elfin butterfly.

MILAGRA RIDGE ALTERNATIVE A CONCLUSION TABLE

San Bruno Elfin Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts	It is unlikely that direct impacts on individuals of this butterfly species would occur from dogs because of the relative inaccessibility of the habitat in relation to trails and because dogs would be required to be on leash	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the fire road and the trail to the westernmost overlook and WW II bunker, as well as on the Milagra Battery Trail. However, the trail to the top of the hill would not be open for dog walking in this alternative. In general, impacts on the San Bruno elfin butterfly would be limited to the existing fire road and trails and the 6-foot corridor immediately adjacent to the trails/fire roads. Because the host plants are not located along the trails and due to the relative inaccessibility of the sedum host plants in relation to trails, negligible impacts on the butterfly in areas adjacent to the trail (6-foot corridor or LOD area) would occur, but impacts on the habitat would not be detectable or measurable.

Overall, assuming compliance with the leash regulation, negligible impacts on the San Bruno elfin butterfly would occur in the Milagra Ridge site. Impacts would be localized and could constitute a permanent loss if San Bruno elfin butterfly eggs or larvae are present on vegetation in or along a trail that is disturbed by dogs. However, it is unlikely that direct impacts on individuals of this butterfly species would occur from dogs as a result of any of the alternatives because of the relative inaccessibility of the habitat in relation to trails and because dogs would be required to be on leash for alternative B.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is uncommon at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on the San Bruno elfin butterfly.

Cumulative Impacts. The negligible impacts on the San Bruno elfin butterfly under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the habitat restoration projects combined with the negligible impacts from alternative B would result in negligible cumulative impacts on the San Bruno elfin butterfly.

MILAGRA RIDGE ALTERNATIVE B CONCLUSION TABLE

San Bruno Elfin Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	It is unlikely that direct impacts on individuals of this butterfly species would occur from dogs because of the relative inaccessibility of the habitat in relation to trails and because dogs would be required to be on leash	No change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking in the same areas as alternative B, and impacts would be the same, assuming compliance: negligible in the LOD area and overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Milagra Ridge, it is likely that commercial dog walkers would have no impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the San Bruno elfin butterfly.

Cumulative Impacts. The negligible impacts on the San Bruno elfin butterfly under alternative C were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the habitat restoration projects combined with the negligible impacts from alternative C would result in negligible cumulative impacts on the San Bruno elfin butterfly.

MILAGRA RIDGE ALTERNATIVE C CONCLUSION TABLE

San Bruno Elfin Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	It is unlikely that direct impacts on individuals of this butterfly species would occur from dogs because of the relative inaccessibility of the habitat in relation to trails and because dogs would be required to be on leash	No change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would not allow dogs at this site, thereby protecting any preferred habitat along the fire road and trails; therefore, this alternative would result in no impact on the San Bruno elfin butterfly.

Since dogs would not be allowed at Milagra Ridge, there would be no impact from commercial dog walkers on the San Bruno elfin butterfly.

Cumulative Impacts. The lack of impacts on the San Bruno elfin butterfly under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the habitat restoration projects combined with the lack of impacts from alternative D would result in negligible cumulative impacts on the San Bruno elfin butterfly.

MILAGRA RIDGE ALTERNATIVE D CONCLUSION TABLE

San Bruno Elfin Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails as alternative B, with the addition of a trail to the top of the hill; even with that addition, impacts would be the same as alternative B, assuming compliance: negligible in the LOD area and overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the San Bruno elfin butterfly.

Cumulative Impacts. The negligible impacts on the San Bruno elfin butterfly under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the habitat restoration projects combined with the negligible impacts from alternative E would result in negligible cumulative impacts on the San Bruno elfin butterfly.

MILAGRA RIDGE ALTERNATIVE E CONCLUSION TABLE

San Bruno Elfin Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	It is unlikely that direct impacts on individuals of this butterfly species would occur from dogs because of the relative inaccessibility of the habitat in relation to trails and because dogs would be required to be on leash	No change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative E, allowing on-leash dog walking on the fire road, the trail to the westernmost overlook and WW II bunker, the Milagra Battery Trail, and the trail to the top of the hill. In general, impacts on the San Bruno elfin butterfly would be limited to the existing fire road and trails and the 6-foot corridor immediately adjacent to the trails/fire roads. Because the host plants are not located along the trails and due to the relative inaccessibility of the sedum host plants in relation to trails, negligible impacts on the butterfly in areas adjacent to the trail (6-foot corridor or LOD area) would occur, but impacts on the habitat would not be detectable or measurable.

Overall, assuming compliance with the leash regulation, negligible impacts on the San Bruno elfin butterfly would occur in the Milagra Ridge site. Impacts would be localized and could constitute a permanent loss if San Bruno elfin butterfly eggs or larvae are present on vegetation in or along a trail that is disturbed by dogs. However, it is unlikely that direct impacts on individuals of this butterfly species would occur from dogs as a result of any of the alternatives because of the relative inaccessibility of the habitat in relation to trails and because dogs would be required to be on leash for the preferred alternative.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Milagra Ridge, it is likely that commercial dog walkers would have no impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the San Bruno elfin butterfly.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs would have the potential to affect the San Bruno elfin butterfly and its habitat in San Mateo County. Since San Bruno elfin butterfly habitat in the park is mapped and monitored on a regular basis, the habitat would be considered and avoided during in-park projects and operations, particularly since it occurs primarily in relatively inaccessible patches on rocky outcrops at Milagra Ridge. Other ongoing programs, including non-native plant removal projects in the park as well as Wildland/Urban Interface Initiative projects on adjacent parklands, may result in beneficial effects by preventing non-native vegetation from displacing San Bruno elfin butterfly habitat. The objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species; therefore, this plan should provide beneficial effects to the San Bruno elfin butterfly. Additionally, the site management plan for Milagra Ridge includes a statement to protect and enhance the habitat of the mission blue butterfly in coordination with GGNRA (NPS) and USFWS. Although habitat restoration as a result of the plans mentioned above has focused on the mission blue butterfly, the plans should both provide beneficial effects to the San Bruno elfin butterfly as well, through protection of existing butterfly habitat.

The negligible impacts on the San Bruno elfin butterfly under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration projects combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on the San Bruno elfin butterfly.

MILAGRA RIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

San Bruno Elfin Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	It is unlikely that direct impacts on individuals of this butterfly species would occur from dogs because of the relative inaccessibility of the habitat in relation to trails and because dogs would be required to be on leash	No change, assuming compliance	Negligible cumulative impacts

Rancho Corral de Tierra

Alternative A: No Action. Dogs are currently allowed on leash at Rancho Corral de Tierra. Staff regularly working at Rancho characterize use by dog walkers as moderate overall with moderate to high use in the Montara area (table 10); compliance with the leash law is generally low. Although occurrences of the species have been noted at the site, these occurrences have not been confirmed. Suitable habitat for the San Bruno elfin butterfly is found in areas that either support or could support the host sedum species of the San Bruno elfin butterfly at rocky outcrops in coastal scrub habitat at this site near the Alta Vista Trail. Suitable breeding habitat has been identified at all known stonecrop locations, including sites near Montara Mountain in rocky outcrops (URS Corporation 2010, 34 and figure 8).

As noted above, Rancho has documented low to moderate visitor use and a low level of leash law compliance. According to information from the Montara Dog Group and subsequent staff observations, dog walkers, particularly off-leash dog walkers, primarily use the lower elevations of the site at both the Montara and El Granada areas. The terrain at El Granada is particularly steep and challenging, thus dog walking use in that area appears to be concentrated mostly in the lower elevations. Although the Montara area is less steep, visitor use there is similarly concentrated in the lower elevations, but some dog walkers in the Montara area do use trails that connect to the top of the Rancho site. Because the suitable habitat for San Bruno elfin butterfly is isolated and remote in the uplands portion of the site, it is unlikely that dogs or visitors would access suitable habitat or butterflies, if present. Additionally, much of the dog walking currently occurs in the Montara portion of the site, which does not contain habitat for the San Bruno elfin butterfly. Therefore, alternative A would result in negligible impacts on the San Bruno elfin butterfly because no measurable or perceptible change in the population or habitat of the San Bruno elfin butterfly would be expected from this alternative. Impacts would be localized and could constitute a permanent loss if San Bruno elfin butterfly eggs or larvae are present on vegetation in areas that are disturbed by dogs. However, it is unlikely that direct impacts on individuals of this butterfly or suitable habitat would occur from dogs as a result of this alternative because of the relative remoteness of the habitat at the site.

No permit system exists for dog walking under alternative A. Commercial dog walkers have begun to use the El Granada area off of Coral Reef Avenue; however, commercial dog walking is considered a low use at the site overall. Therefore, commercial dog walking would have negligible impacts on the San Bruno elfin butterfly at this site.

Cumulative Impacts. Projects and actions in and near Rancho Corral de Tierra were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Bruno elfin butterfly at or in the vicinity of this site. Since the Rancho Corral de Tierra site has been transferred to the NPS, general protection of the site and associated natural resources has occurred and will continue, although some impacts may remain from prior unregulated off-leash dog walking.

The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the San Bruno elfin butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Other ongoing programs, including non-native plant removal projects in the park as well as Wildland/Urban Interface Initiative projects on adjacent parklands, may result in beneficial effects by preventing non-native vegetation from displacing San Bruno elfin butterfly habitat.

Since the Rancho Corral de Tierra site has been transferred to NPS, general maintenance and protection of the site and associated natural resources has occurred and will continue, but there are currently no plans to restore host plants for the San Bruno elfin butterfly at Rancho. The effects from future construction projects, maintenance operations, and other agency projects on San Bruno elfin butterfly habitat may be adverse, but these actions have not yet been identified and are currently unknown and would likely require mitigation.

The negligible impacts on the San Bruno elfin butterfly from dogs at Rancho Corral de Tierra under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects combined with the negligible impacts on the San Bruno elfin butterfly would result in negligible cumulative impacts on this butterfly species.

RANCHO CORRAL DE TIERRA ALTERNATIVE A CONCLUSION TABLE

San Bruno Elfin Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts	It is unlikely that impacts on individuals of this butterfly species or habitat would occur from dogs because of the relative inaccessibility of the habitat at the site	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. On-leash dog walking would be allowed on designated trails in two areas open to dog walking near Montara and El Granada, which were identified by the local dog walking group as key areas for this use. The mapped occurrences and host plants for the San Bruno elfin butterfly are not found within the vicinity of designated trails under alternative B. Because habitat is located away from dog walking trails and is relatively remote, there would be no impacts on the San Bruno elfin butterfly from on-leash dog walking, assuming compliance.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Currently, commercial dog walking use is low at Rancho Corral de Tierra and dog walking trails are located away from San Bruno elfin butterfly habitat; therefore, commercial dog walking would have no impacts on the San Bruno elfin butterfly.

Cumulative Impacts. The lack of impacts on the San Bruno elfin butterfly habitat from dogs at Rancho Corral de Tierra under alternative B was considered together with the effects of the projects mentioned under alternative A. The anticipated beneficial effects from habitat restoration projects combined with the lack of impacts on the San Bruno elfin butterfly would result in beneficial cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE B CONCLUSION TABLE

San Bruno Elfin Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Butterfly habitat is remote, and located away from dog walking trails.	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed on the same trails as alternative B within two areas currently open to dog walking at Rancho Corral de Tierra in the Montara and El Granada areas. A VSCA is also proposed under alternative C in the Montara area between Le Conte Street and Tamarind Street, in an open grassy area near the Farallone View School. The proposed trails and VSCA are not located within the vicinity of San Bruno elfin butterfly habitat or host plants. Therefore, alternative C would have the same impact as alternative B: no impact, assuming compliance.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Currently, commercial dog walking use is low at Rancho Corral de Tierra and habitat for the San Bruno elfin butterfly is located away from trails and the VSCA; therefore, commercial dog walking under this alternative would have no impact on the San Bruno elfin butterfly.

Cumulative Impacts. Under alternative C, the cumulative impacts on the San Bruno elfin butterfly at this park site would be the same as those under alternative B: beneficial.

RANCHO CORRAL DE TIERRA ALTERNATIVE C CONCLUSION TABLE

San Bruno Elfin Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Butterfly habitat is remote, and located away from dog walking trails and the VSCA.	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed in the Montara area on two existing trails: Old San Pedro Mountain Road and the Farallon Cutoff. Dogs would be prohibited in other areas of the site, including the entire El Granada area. There is no suitable habitat for the San Bruno elfin butterfly in the Montara area of the Rancho site. Therefore, the impacts to the butterfly under alternative D would be the same as alternative B: no impact, assuming compliance.

Since no commercial dog walking would be allowed and no permits for walking more than three dogs would be issued under alternative D, no impact on the San Bruno elfin butterfly from commercial and permitted dog walking would occur.

Cumulative Impacts. Under alternative D, the cumulative impacts on the San Bruno elfin butterfly at this park site would be the same as those under alternative B: beneficial.

RANCHO CORRAL DE TIERRA ALTERNATIVE D CONCLUSION TABLE

San Bruno Elfin Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Butterfly habitat is not located within the Montara area.	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same: no impact, assuming compliance.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Currently, Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Commercial dog walking use is low at Rancho Corral de Tierra and habitat for the San Bruno elfin butterfly is located away from dog walking trails; therefore, commercial dog walking would have no impact on the San Bruno elfin butterfly.

Cumulative Impacts. Under alternative E, the cumulative impacts on the San Bruno elfin butterfly at this park site would be the same as those under alternative B: beneficial.

RANCHO CORRAL DE TIERRA ALTERNATIVE E CONCLUSION TABLE

San Bruno Elfin Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Butterfly habitat is remote, and located away from dog walking trails and the VSCA.	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on designated trails in three areas. Trails in Montara include Old San Pedro Mountain Road, LeConte Trail, Corona Pedro Trail, and Farallon Cutoff from the park boundary in the west to the intersection with Corona Pedro Trail. On-leash trails in the El Granada area include the Denniston Ridge Trail between the San Carlos Trail and its intersection with the Clipper Ridge Trail, the Clipper Ridge Trail, the Memorial Loop, the Almeria Trail, and the San Carlos Trail. In the Moss Beach area, on-leash dog walking would be allowed on the Vincente Ridge and Ranchette Trails. The preferred alternative would also establish a VSCA at Flat Top; however, the area is a former quarry site and does not support suitable habitat for the San Bruno elfin butterfly in or adjacent to the area. Although occurrences of the San Bruno elfin butterfly have been recorded at Rancho, these occurrences are unconfirmed, and are located away from dog walking trails under alternative F. Additionally, suitable habitat for the butterfly is located in a remote and isolated area of the site in rocky outcroppings. Therefore there would be no impact on the San Bruno elfin butterfly from on-leash dog walking at Rancho Corral de Tierra, assuming compliance.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Currently, commercial dog walking use is low at Rancho Corral de Tierra, and suitable habitat is located well away from dog walking trails; therefore, commercial dog walking would have no impact on the San Bruno elfin butterfly.

Cumulative Impacts. Projects and actions in and near Rancho Corral de Tierra were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Bruno elfin butterfly at or in the vicinity of this site. Since the Rancho Corral de Tierra site has been transferred to the NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking.

The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the San Bruno elfin butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Other ongoing programs, including non-native plant removal projects in the park as well as Wildland/Urban Interface Initiative projects on adjacent parklands, may result in beneficial effects by preventing non-native vegetation from displacing San Bruno elfin butterfly habitat.

Since the Rancho Corral de Tierra site has been transferred to the NPS, general maintenance and protection of the site and associated natural resources would occur, but currently the park has no site-specific plans to restore host plants for the San Bruno elfin butterfly. The effects from future construction projects, maintenance operations, and other agency projects on San Bruno elfin butterfly habitat may be adverse, but these actions have not yet been identified and are currently unknown and would likely require mitigation.

The lack of impacts on the San Bruno elfin butterfly from dogs at Rancho Corral de Tierra under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects combined with the lack of impacts on the San Bruno elfin butterfly would result in beneficial cumulative impacts on this butterfly species.

RANCHO CORRAL DE TIERRA PREFERRED ALTERNATIVE F CONCLUSION TABLE

San Bruno Elfin Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Butterfly habitat is remote, and located away from dog walking trails.	Beneficial, assuming compliance	Beneficial cumulative impacts

IMPACTS TO MISSION BLUE BUTTERFLY (FEDERALLY ENDANGERED) BY SITE AND ALTERNATIVE

Mission blue butterfly populations use lupine host plants (*Lupinus albifrons*, *L. formosus*, and *L. variicolor*) that inhabit coastal scrub habitat and grassland habitat at GGNRA. The mission blue butterfly is very closely tied to the lupine host plants that support them, and adult butterflies lay their eggs on these plants. For purposes of this analysis, existing habitat is defined as areas where the mission blue butterfly host plants have been mapped. Additionally, other suitable habitat for the mission blue butterfly has been identified by modeling areas that have similar characteristics to existing mission blue butterfly habitat. Transect surveys have been conducted during the flight season (March–May) in suitable habitat to document and monitor mission blue butterflies. In the study area, the mission blue butterfly has been documented at Alta Trail/Orchard Fire Road/Pacheco Fire Road, Oakwood Valley, the Marin Headlands Trails, Fort Baker, Milagra Ridge, and Sweeney Ridge/Cattle Hill; Tennessee Valley, in the Marin Headlands Trails, also has mission blue butterfly habitat and documented occurrences of mission blue butterfly (Bennett 2008, 8). In the Montara area of Rancho Corral de Tierra, patches of mission blue butterfly host plants (*Lupinus variicolor*) exist above Old San Pedro Road, near where on-leash dog walking is allowed. Of the three lupine host plant species, Lupinus variicolor is the least favored but is still important to the life cycle of the mission blue butterfly. Suitable habitat for the mission blue butterfly can be found in the Montara and El Granada areas of Rancho Corral de Tierra.

As previously discussed, vegetation can be affected by trampling, and dog waste contains nutrients and can increase the amount of nitrogen and phosphorus in the soil (CRCCD 2009, 1). Dogs may also bring in seeds of non-native plant species, which pose a threat to the lupine host plants. Trailheads are known as areas of disturbance by visitors and their activities as well as by "marking" dogs. The lupine host plants grow in the trail beds and directly adjacent to the trail in some locations as well as off trail at GGNRA. Therefore, mission blue butterfly host plants (mission blue butterfly habitat) could be affected by both on- and off-leash dog walking due to the plants' presence in and adjacent to the trail beds. The permanent loss of individuals of the species could occur if mission blue butterfly eggs or larvae are present on vegetation along a trail/road that is disturbed by dogs. Potential adverse impacts from dogs include trampling host plants, dislodging eggs from host plants, crushing larvae, adding nutrients to soils from dog waste, and spreading invasive plants, all of which could affect the lupine host plants that support the mission blue butterfly. A more detailed mission blue butterfly discussion regarding individual sites and by alternative is included below.

Alta Trail/Orchard Fire Road/Pacheco Fire Road

Alternative A: No Action. Under current conditions, dogs are allowed under voice control or on leash on the trails and roads from Marin City to Oakwood Valley. These areas experience low to moderate use by

runners, bicyclists, and hikers (table 10) and the site is a high use individual and commercial dog walking area, with typically 5 to 12 dogs under voice control per commercial walker. There is mapped mission blue butterfly habitat in the grassy hillsides between the Alta Trail and Oakwood Valley Fire Road, where social trails have connected the fire roads; these social trails are closed, but still experience use by both visitors and dogs. These grassy hillsides adjacent to Alta Trail (mapped mission blue butterfly habitat) are a favorite use area for commercial dog walkers, and fencing has been erected to exclude dogs from mission blue butterfly habitat. Therefore, the social trails in mission blue butterfly habitat that are used by dog walkers, particularly commercial dog walkers with voice controlled dogs, are potentially susceptible to physical disturbance by dogs.

Under alternative A, dogs would be allowed under voice control and there is a higher likelihood of dogs going off the trail and fire roads than if they were on leash. Alternative A would continue to result in long-term minor to moderate adverse impacts on the mission blue butterfly at Alta Trail/Orchard Fire Road/Pacheco Fire Road. Through digging, trampling, and nutrient addition from dog waste, dogs would continue to cause localized, perceptible damage to mission blue butterfly habitat in the trail beds, roads, and adjacent areas as a result of damage to the vegetation. Some disturbance, such as occasional digging, can help the mission blue butterfly host plant, lupine, colonize; however, if soils are compacted or the soil chemistry is altered from nutrient addition from dog waste, this could prevent colonization. Additionally, nonnative species are a large threat to lupine; dogs can act as vectors, carrying the seeds of non-native plant species into areas where they would not otherwise be. Even though impacts would be localized in a relatively small area, the reproductive success of individuals may also be affected as an indirect result of impacts on mission blue butterfly habitat.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road is common, with commercial dog walkers often having 5 to 12 dogs under voice control at one time. Commercial dog walking would continue to create long-term minor to moderate adverse impacts on the mission blue butterfly. Dogs under voice control would continue to disturb the mission blue butterfly and associated habitat.

Cumulative Impacts. Projects and actions in and near Alta Trail/Orchard Fire Road/Pacheco Fire Road were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in Marin County—all have the potential to beneficially affect the mission blue butterfly and its habitat in Alta Trail/Orchard Fire Road/Pacheco Fire Road. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road occurs regularly. Therefore, the interim

compendium amendment would have a beneficial effect on mission blue butterfly habitat by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage, increased potential for establishment of invasive plant species, and nutrient addition from dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as Alta Trail/Orchard Fire Road/Pacheco Fire Road. The park stewardship programs, Marin County fire management activities, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat.

The long-term minor to moderate adverse impacts on the mission blue butterfly from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects and the interim permitting program should reduce some of the adverse impacts on the mission blue butterfly from alternative A; however, the effects from the fire management activities, maintenance operations, and other agency projects on mission blue butterfly habitat would be adverse. When combined, the beneficial and adverse effects from these projects may balance out. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on the mission blue butterfly under this alternative would be expected to be long term, minor to moderate, and adverse.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE A CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Dogs could damage mission blue butterfly habitat in the trail beds and adjacent to the trails and roads; protective fencing for habitat would not exclude noncompliant dogs and social trails would degrade habitat	N/A	Long-term minor to moderate, adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Alta Trail to Orchard Fire Road and on Orchard Fire Road and Pacheco Fire Road. On-leash dog walking would be based on an allowed 6-foot dog leash. The LOD area would include Alta Trail, Orchard Fire Road, Pacheco Fire Road, and all areas adjacent to the trails/roads up to 6 feet. Existing mission blue butterfly habitat at Alta Trail/Orchard Fire Road/Pacheco Fire Road is located away from the trails (beyond the 6-foot LOD corridors) and dogs on leash on the trails would not be in proximity to mission blue butterfly habitat; thus, they would not likely impact mission blue butterfly habitat in the LOD area. Therefore, impacts in the LOD area would be negligible.

Overall, alternative B would result in negligible impacts on the mission blue butterfly, assuming compliance. Under alternative B, dogs would no longer be allowed on the social trails at Alta Trail/ Orchard Fire Road/Pacheco Fire Road (which meander through mission blue butterfly habitat), so this alternative would keep dogs out of mission blue butterfly habitat. The loss of these trails would reduce the opportunity for dogs to be in proximity to mission blue butterfly habitat, and although this would protect

adjacent trail habitat, it would not result in a measurable or perceptible change for the mission blue butterfly; therefore, impacts would remain negligible.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on the mission blue butterfly from dogs at the site. Overall impacts on the mission blue butterfly from dogs walked by both commercial and private individuals are summarized above.

Cumulative Impacts. Projects and actions in and near Alta Trail/Orchard Fire Road/Pacheco Fire Road were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in Marin County—all have the potential to beneficially affect the mission blue butterfly and its habitat in Alta Trail/Orchard Fire Road/Pacheco Fire Road. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as Alta Trail/Orchard Fire Road/Pacheco Fire Road. The park stewardship programs, Marin County fire management activities, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat.

The negligible impacts on the mission blue butterfly from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the negligible impacts from alternative B would result in negligible cumulative impacts on the mission blue butterfly.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE B CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Existing habitat is located away from trails and dogs on leash on the trails would not be in proximity to mission blue butterfly habitat; use of social trails would be eliminated	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: negligible in the LOD area and overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs, and the permit may restrict use by time and area. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road. Impacts on the mission blue butterfly from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on the mission blue butterfly would be expected from this user group. Impacts on the mission blue butterfly from commercial dog walkers would be similar to impacts from other dog walkers as summarized in the preceding paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Under alternative C, the cumulative impacts on the mission blue butterfly at this park site would be the same as those under alternative B: negligible.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE C CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Existing habitat is located away from trails and use of the social trails at the site would be eliminated	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, assuming compliance, no impacts on the mission blue butterfly from dogs would occur at this site.

Since no commercial dog walking would be allowed under alternative D, no impact on the mission blue butterfly from commercial dog walking would occur.

Cumulative Impacts. The lack of impacts on the mission blue butterfly at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative D was considered together with the effects of the projects mentioned above under alternative B. There would be a combination of adverse and beneficial effects from actions in and around this park site; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the lack of impacts on the mission blue butterfly from dogs under alternative D would result in negligible cumulative impacts.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE D CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Alta Trail from Donahue Street to the junction with the Morning Sun Trail and on Orchard and Pacheco fire roads. While the mileage open to dog walking would be greater than that described for alternative B, the impacts would be similar, assuming compliance: negligible both in the LOD area and overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road, however, permits could restrict dog walkers to the section of Alta Trail between Donahue Street and the junction with the Orchard Fire Road. Impacts on the mission blue butterfly from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on the mission blue butterfly would be expected from this user group. Impacts on the mission blue butterfly from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the preceding paragraph.

Cumulative Impacts. The negligible impacts on the mission blue butterfly from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative E were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the habitat restoration and protection projects combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the negligible impacts from alternative E would result in negligible cumulative impacts on the mission blue butterfly.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE E CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Existing habitat at is located away from trails and dogs on leash on the trails would not be in proximity to mission blue butterfly habitat; use of social trails would be eliminated	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative E. The preferred alternative would allow on-leash dog walking on Alta Trail from Donahue Street to the junction with the Morning Sun Trail and on Orchard and Pacheco fire roads. The LOD area would include Alta Trail, Orchard Fire Road, Pacheco Fire Road, and all areas adjacent to the trail/roads up to 6 feet. Existing mission blue butterfly habitat at Alta Trail/Orchard Fire Road/Pacheco Fire Road is located away from the trails (beyond the 6-foot LOD corridors) and dogs on leash on the trails would not be in proximity to mission blue butterfly habitat; thus, on-leash dogs would not likely impact mission blue butterfly habitat in the LOD area. Therefore, impacts in the LOD area would be negligible.

Assuming compliance, the preferred alternative would result in overall negligible impacts on the mission blue butterfly. Under the preferred alternative, dogs would no longer be allowed on the social trails at Alta Trail/Orchard Fire Road/Pacheco Fire Road (which meander through mission blue butterfly habitat), so this alternative would keep dogs out of mission blue butterfly habitat. The loss of these trails would reduce the opportunity for dogs to be in proximity to mission blue butterfly habitat, and although this would protect adjacent trail habitat, it would not result in a measurable or perceptible change for the mission blue butterfly, resulting in negligible impacts.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs, and the permit may restrict use by time and area. Permits would be allowed for Alta Trail from Donahue Street to the intersection with Orchard Trail. Impacts on the mission blue butterfly from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level given the restriction of permit holders to a limited section of the Alta Trail. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road**,** impacts on the mission blue butterfly would be expected from this user group. Impacts on the mission blue butterfly from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the preceding paragraph.

Cumulative Impacts. Projects and actions in and near Alta Trail/Orchard Fire Road/Pacheco Fire Road were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in Marin County—all have the potential to beneficially affect the mission blue butterfly and its habitat in Alta Trail/Orchard Fire Road/Pacheco Fire Road. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as Alta Trail/Orchard Fire Road/Pacheco Fire Road. The park stewardship programs, Marin County fire management activities, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat.

The negligible impacts on the mission blue butterfly from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects combined with the adverse effects from the fire management activities, maintenance operations, and other

agency projects and the negligible impacts from the preferred alternative would result in negligible cumulative impacts on the mission blue butterfly.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD PREFERRED ALTERNATIVE F CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Existing habitat is located away from trails and use of the social trails at this site would be eliminated	Beneficial, assuming compliance	Negligible cumulative impacts

Oakwood Valley

Alternative A: No Action. Dogs are currently allowed on leash or under voice control on the Oakwood Valley Fire Road and on the Oakwood Valley Trail from the junction with the fire road to Alta Trail. On-leash dog walking is allowed on the Oakwood Valley Trail from the trailhead to the junction with Oakwood Valley Fire Road. These areas experience moderate use by dog walkers (table 10). There is no mission blue butterfly habitat directly along Oakwood Valley Fire Road. However, there is mapped mission blue butterfly habitat in the grassy hillsides between this fire road and the Alta Trail, where social trails have connected the fire roads; these social trails are closed but experience use by both visitors and dogs. These grassy hillsides adjacent to Oakwood Valley Fire Road (mapped mission blue butterfly habitat) are a favorite use area for commercial dog walkers, and fencing has been erected to exclude dogs from mission blue butterfly habitat. Therefore, the social trails in mission blue butterfly habitat that are used by dog walkers, particularly commercial dog walkers with voice controlled dogs, are potentially susceptible to physical disturbance by dogs.

Because off-leash dog access to wildlife and associated habitat off trails and fire roads would continue, impacts on mission blue butterfly habitat at Oakwood Valley would be similar to those described in detail above at Alta Trail/Orchard Fire Road/Pacheco Fire Road, long-term minor to moderate adverse. Through digging, trampling, and nutrient addition from dog waste, dogs would continue to cause localized, perceptible damage to mission blue butterfly habitat in the trail beds, roads, and adjacent areas as a result of damage to the vegetation. Some disturbance, such as occasional digging, can help the mission blue butterfly host plant, lupine, colonize; however, if soils are compacted or the soil chemistry is altered from nutrient addition from dog waste, this could prevent colonization. Additionally, nonnative species are a large threat to lupine; dogs can act as vectors, carrying the seeds of non-native plant species into areas where they would not otherwise be. Even though impacts would be localized in a relatively small area, the reproductive success of individuals may also be affected as an indirect result of impacts on mission blue butterfly habitat.

Under alternative A, no permit system exists for dog walking. At Oakwood Valley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer

opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in Marin County—all have the potential to beneficially affect the mission blue butterfly and its habitat in Oakwood Valley. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Oakwood Valley is uncommon. However, the interim compendium amendment would have a slight beneficial effect on mission blue butterfly habitat by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage, increased potential for establishment of invasive plant species, and nutrient addition from dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as Oakwood Valley. The park stewardship programs, Marin County fire management activities, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat.

The long-term minor to moderate adverse impacts on the mission blue butterfly from dogs at Oakwood Valley under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects and the interim permitting program should reduce some of the adverse impacts on the mission blue butterfly from alternative A; however, the effects from the fire management activities, maintenance operations, and other agency projects on mission blue butterfly habitat would be adverse. When combined, the beneficial and adverse effects from these projects may balance out. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on the mission blue butterfly under this alternative would be expected to be long term, minor to moderate, and adverse.

OAKWOOD VALLEY ALTERNATIVE A CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Dogs could damage mission blue butterfly habitat in the trail beds and adjacent to the trails and roads; protective fencing for habitat would not exclude noncompliant dogs and social trails would degrade habitat	N/A	Long-term minor to moderate adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Oakwood Valley Fire Road and Oakwood Valley Trail to its junction with the fire road. On-leash dog walking would be based on an allowed 6-foot dog leash. The LOD area would include Oakwood Valley Fire Road and Oakwood Valley Trail and all areas adjacent to the trail/road up to 6 feet. Existing mission

blue butterfly habitat at Oakwood Valley is located away from the trails/roads (beyond the 6-foot LOD corridors) and dogs on leash on the trails would not be in proximity to mission blue butterfly habitat; thus, dogs would not likely impact mission blue butterfly habitat in the LOD area. Therefore, impacts in the LOD area would be negligible.

Overall, alternative B would result in negligible impacts on the mission blue butterfly at Oakwood Valley. Under alternative B, dogs would no longer be allowed on the social trails near Oakwood Valley Fire Road (which meander through mission blue butterfly habitat), so this alternative would keep dogs out of mission blue butterfly habitat. The loss of these trails would reduce the opportunity for dogs to be in proximity to mission blue butterfly habitat, and although this would protect adjacent trail habitat, it would not result in a measurable or perceptible change for the mission blue butterfly; therefore, impacts would remain negligible.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in Marin County—all have the potential to beneficially affect the mission blue butterfly and its habitat in Oakwood Valley. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as Oakwood Valley. The park stewardship programs, Marin County fire management activities, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat.

The negligible impacts on the mission blue butterfly from dogs at Oakwood Valley under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the habitat restoration and protection projects combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the negligible impacts from alternative B would result in negligible cumulative impacts on the mission blue butterfly.

OAKWOOD VALLEY ALTERNATIVE B CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Existing habitat is located away from trails and dogs on leash on the trails would not be in proximity to mission blue butterfly habitat; use of social trails would be eliminated	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C proposes a VSCA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with continuous fencing to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to the junction with Alta Trail. Dogs under voice and sight control in the VSCA would have access to the land between the edge of the trail and fence (LOD area). Impacts on the mission blue butterfly in the LOD area (in the VSCA and in the 6-foot corridors adjacent to the trail) would be negligible because existing mission blue butterfly habitat is located away from the trails (beyond the 6-foot LOD corridors) and not in the area proposed as a VSCA. Dogs on leash on the fire road would not be in proximity to mission blue butterfly habitat; thus, dogs would not likely impact mission blue butterfly habitat in the LOD area. Therefore, impacts in the LOD area would be negligible.

Overall, alternative C would result in negligible impacts on the mission blue butterfly at Oakwood Valley. Under alternative C, dogs would no longer be allowed on the social trails near Oakwood Valley Fire Road (which meander through mission blue butterfly habitat), so this alternative would keep dogs out of mission blue butterfly habitat. The loss of these trails would reduce the opportunity for dogs to be in proximity to mission blue butterfly habitat, and although this would protect adjacent trail habitat, it would not result in a measurable or perceptible change for the mission blue butterfly; therefore, impacts would remain negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on the mission blue butterfly.

Cumulative Impacts. The negligible impacts on the mission blue butterfly from dogs at Oakwood Valley under alternative C were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the habitat restoration and protection projects combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the negligible impacts from alternative C would result in negligible cumulative impacts on the mission blue butterfly.

OAKWOOD VALLEY ALTERNATIVE C CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Existing habitat is located away from trails and use of the social trails near the fire road would be eliminated	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: negligible in the LOD area and overall.

No commercial dog walking or permits to walk more than three dogs would be allowed under alternative D; therefore, commercial dog walking would have no impact on the mission blue butterfly.

Cumulative Impacts. The negligible impacts on the mission blue butterfly from dogs at Oakwood Valley under alternative D were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the habitat restoration and protection projects combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the negligible impacts from alternative D would result in negligible cumulative impacts on the mission blue butterfly.

OAKWOOD VALLEY ALTERNATIVE D CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Existing habitat is located away from trails and dogs on leash on the trails would not be in proximity to mission blue butterfly habitat; use of social trails would be eliminated	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E proposes a VSCA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with noncontinuous fencing where needed to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to a new gate at Alta Trail. Dogs under voice control in the VSCA would have access to the land between the edge of the trail and fence (LOD area). Impacts on the mission blue butterfly in the LOD area (in the VSCA and in the 6-foot corridors adjacent to trails) would be negligible because existing mission blue butterfly habitat is located away from the trails (beyond the 6-foot LOD corridors) and not in the area proposed as a VSCA. Dogs on leash on the trails would not be in proximity to mission blue butterfly habitat and thus would not likely impact mission blue butterfly habitat in the LOD area. Therefore, impacts in the LOD area would be negligible.

Assuming compliance, alternative E would result in overall negligible impacts on the mission blue butterfly at Oakwood Valley. Under alternative E, dogs would no longer be allowed on the social trails near Oakwood Valley Fire Road (which meander through mission blue butterfly habitat), so this alternative would keep dogs out of mission blue butterfly habitat. The loss of these trails would reduce the opportunity for dogs to be in proximity to mission blue butterfly habitat, and although this would protect

adjacent trail habitat, it would not result in a measurable or perceptible change for the mission blue butterfly; therefore, impacts would remain negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Under alternative E, the cumulative impacts on the mission blue butterfly at this park site would be the same as those under alternative C: negligible.

OAKWOOD VALLEY ALTERNATIVE E CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Existing habitat is located away from trails and use of the social trails near the fire road would be eliminated	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Oakwood Valley Fire Road and on the Oakwood Valley Trail from the junction with the fire road to the junction with the Alta Trail. On-leash dog walking would also be allowed on the short segment of the Rhubarb Trail, which allows visitors from the Tennessee Valley Road community to access to the Oakwood Valley Fire Road without having to drive there. Impacts on the mission blue butterfly in the LOD area (in the 6-foot corridors adjacent to trails) would be negligible because existing mission blue butterfly habitat is located away from the trails (beyond the 6-foot LOD corridors). Dogs on leash on the trails would not be in proximity to mission blue butterfly habitat and thus would not likely impact mission blue butterfly habitat in the LOD; therefore, impacts in the LOD area would be negligible.

Overall, the preferred alternative would result in negligible impacts on the mission blue butterfly at Oakwood Valley. Dogs would no longer be allowed on the social trails near Oakwood Valley Fire Road (which meander through mission blue butterfly habitat), so this alternative would keep dogs out of mission blue butterfly habitat. The loss of these trails would reduce the opportunity for dogs to be in proximity to mission blue butterfly habitat, and although this would protect adjacent trail habitat, it would not result in a measurable or perceptible change for the mission blue butterfly; therefore, impacts would remain negligible.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Oakwood Valley is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in Marin County—all have the potential to beneficially affect the mission blue butterfly and its habitat in Oakwood Valley. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as Oakwood Valley. The park stewardship programs, Marin County fire management activities, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat.

The negligible impacts on the mission blue butterfly from dogs at Oakwood Valley under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the negligible impacts from the preferred alternative would result in negligible cumulative impacts on the mission blue butterfly.

OAKWOOD VALLEY PREFERRED ALTERNATIVE F CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Existing habitat is located away from trails and use of the social trails near the fire road would be eliminated	Beneficial, assuming compliance	Negligible cumulative impacts

Marin Headlands Trails

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed along the Coastal Trail from Hill 88 to Muir Beach, Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, and Marin Drive. As a result of the 2005 federal court order affirming the 2004 *U.S. v. Barley* decision, dog walking under voice control (or on leash) is allowed along other portions of the Coastal Trail (Golden Gate Bridge to Hill 88, including portions of the Lagoon Loop Trail); the Coastal, Wolf Ridge, and Miwok Trail Loop; and the Old Bunker Fire Road Loop (includes a section of the Coastal Trail). These trails experience low to moderate use by dog walkers. Dog-related incidents are high at this site with a total of 269 from 2008 through 2011, with the majority of incidents for having dogs within areas closed to pets and an additional 232 incidents reported from 2012 through 2016 (tables 17a and 17b). Mission blue butterflies and habitat exist along the North Miwok trail corridor, where dogs are allowed on leash, and along a section of the Coastal Trail (Julian Road) where voice control dog walking is allowed. The park practice is to close trails through mission blue butterfly habitat to bicycles, dogs, and horses, but allow dogs on leash on fire roads through mission blue butterfly habitat.

The Barley decision reinstated voice control dog walking along the Coastal Trail between the Golden Gate Bridge and Hill 88 even though the park had a biological opinion from USFWS (1995) restricting dogs to protect mission blue butterfly habitat along the section of the Coastal Trail from Slacker Ridge to the Rifle Range. The reinstatement of voice control potentially allows dogs to roam off trail in these areas. Fencing was placed in the mid-1990s to protect mission blue butterfly habitat along sections of the Coastal Trail to protect lupine host plants, although the fencing is post and cable and would not necessarily exclude dogs.

The Tennessee Valley portion of the Marin Headlands Trails contains mission blue butterfly habitat and mission blue butterflies have been observed along the North Miwok Trail (Bennett 2008, 8). Tennessee Valley is closed to dogs, but the Coastal Trail (where dogs are allowed on leash) crosses lower Tennessee Valley, and the North Miwok Trail (which allows on-leash dog walking) meets the upper Tennessee Valley Trail. Alternative A would continue to result in long-term minor to moderate adverse impacts on the mission blue butterfly at the Marin Headlands Trails, similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Through digging, trampling, and nutrient addition from dog waste, dogs would continue to cause localized, perceptible damage to mission blue butterfly habitat in the trail beds, roads, and adjacent areas as a result of damage to the vegetation. Some disturbance, such as occasional digging, can help the mission blue butterfly host plant, lupine, colonize; however, if soils are compacted or the soil chemistry is altered from nutrient addition from dog waste, this could prevent colonization. Additionally, nonnative species are a large threat to lupine; dogs can act as vectors, carrying the seeds of non-native plant species into areas where they would not otherwise be. Even though impacts would be localized in a relatively small area, the reproductive success of individuals may also be affected as an indirect result of impacts on mission blue butterfly habitat.

Under alternative A, no permit system exists for commercial dog walking. At the Marin Headlands Trails, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of the Marin Headlands Trails.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), the Southern Marin Headlands Project, Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in Marin County—all have the potential to beneficially affect the mission blue butterfly and its habitat in the Marin Headlands Trails. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species, and the plan is focused on the Marin Headlands Trails and Fort Baker. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside these locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements; restoring historic coastal scrub habitats by controlling non-native plants (e.g., gorse, French broom, pampas grass) that threaten the associated host and nectar plants used by the mission blue butterfly species, including silver-leaf lupine; and preventing further habitat degradation due to herbicides, pesticides, other toxicants, and off-road vehicle use (USFWS 1984). The Southern Marin Headlands Project initiated in the summer/fall of 2007, and completed in 2013, focused on enhancing the Coastal Trail corridor in the southern Marin Headlands and included removal of selected non-native trees that

compromise the health of habitat used by the mission blue butterfly (GGNPC n.d., 1). Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Marin Headlands Trails is uncommon. However, the interim compendium amendment would have a slight beneficial effect on mission blue butterfly habitat by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage, increased potential for establishment of invasive plant species, and nutrient addition from dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as the Marin Headlands Trails. The park stewardship programs, the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (NPS 2009c, ix, 82), Marin County fire management activities, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat. Approximately 93 acres of habitat for the mission blue butterfly will be restored in the southern Marin Headlands to mitigate for impacts from road and trail construction that are a part of the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (GGNPC 2010d, 1).

The long-term minor to moderate adverse impacts on the mission blue butterfly from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects and the interim permitting program should reduce some of the adverse impacts on the mission blue butterfly from alternative A; however, the effects from the fire management activities, maintenance operations, and other agency projects on mission blue butterfly habitat would be adverse. When combined, the beneficial and adverse effects from these projects may balance out. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on the mission blue butterfly under this alternative would be expected to be long term, minor to moderate, and adverse.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Dogs could damage mission blue butterfly habitat in the trail beds and adjacent to the trails and roads; protective fencing for habitat would not exclude noncompliant dogs	N/A	Long-term minor to moderate adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs on the trails. This alternative would be most protective of the coastal scrub habitat and the mission blue butterfly lupine host plants, and would maintain the integrity of the entire Marin Headlands Trails site. Assuming compliance, alternative B would result in no impact on the mission blue butterfly.

Since dogs would not be allowed in the Marin Headlands Trails, there would be no impact from commercial dog walkers on the mission blue butterfly.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of the Marin Headlands Trails.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), the Southern Marin Headlands Project, Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in Marin County—all have the potential to beneficially affect the mission blue butterfly and its habitat in the Marin Headlands Trails. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species, and the plan is focused on the Marin Headlands Trails and Fort Baker. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside these locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements; restoring historic coastal scrub habitats by controlling non-native plants (e.g., gorse, French broom, pampas grass) that threaten the associated host and nectar plants used by the mission blue butterfly species, including silver-leaf lupine; and preventing further habitat degradation due to herbicides, pesticides, other toxicants, and off-road vehicle use (USFWS 1984). The Southern Marin Headlands Project initiated in the summer/fall of 2007, and completed in 2013, focused on enhancing the Coastal Trail corridor in the southern Marin Headlands and included removal of selected non-native trees that compromise the health of habitat used by the mission blue butterfly (GGNPC n.d., 1). Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as the Marin Headlands Trails. The park stewardship programs, the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (NPS 2009c, ix, 82), Marin County fire management activities, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat. Approximately 93 acres of habitat for the mission blue butterfly will be restored in the southern Marin Headlands to mitigate for impacts from road and trail construction that are a part of the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (GGNPC 2010d, 1).

The lack of impacts on the mission blue butterfly from dogs at the Marin Headlands Trails under alternative B was considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the lack of impacts from alternative B would result in negligible cumulative impacts on the mission blue butterfly.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor. This corridor extends from the Rodeo Beach

parking lot to the intersection of Bunker and McCullough Roads via the North Lagoon Loop Trail, North Miwok Trail, and Rodeo Valley Trail, including the connector trail from the Rodeo Valley Trail to the Smith Road Trailhead. On-leash dog walking would also be allowed on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), and the Batteries Loop Trail. This alternative would allow on-leash dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. Because dogs would not be allowed on the North Miwok Trail and the hiking-only section of the Coastal Trail (Julian Road, where mission blue butterfly habitat exists) under alternative C, negligible impacts on the mission blue butterfly would occur in the LOD area because existing vegetation that supports the mission blue butterfly is not located along the trails/roads.

Because dogs would not be allowed on the North Miwok Trail and the Coastal Trail bicycle route (which includes Julian Road, where mission blue butterfly habitat exists), overall negligible impacts on the mission blue butterfly would occur because of protection of habitat along the trails and roads of the Marin Headlands. This alternative would not result in a measurable or perceptible change in mission blue butterfly habitat; therefore, impacts in the site as a whole would remain negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Marin Headlands Trails is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. The negligible impacts on the mission blue butterfly from dogs at the Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the habitat restoration and protection projects combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the negligible impacts from alternative C would result in negligible cumulative impacts on the mission blue butterfly.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	On-leash dog access would be allowed only on the perimeter trails, preserving the integrity of interior habitat; prohibiting dogs on the North Miwok Trail and the hiking-only section of the Coastal Trail would protect habitat	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B (no dogs on site), and impacts would be the same, assuming compliance: no impact.

Since dogs would not be allowed at Marin Headlands Trails, there would be no impact from commercial dog walkers on the mission blue butterfly under this alternative.

Cumulative Impacts. The lack of impacts on the mission blue butterfly from dogs at the Marin Headlands Trails under alternative D was considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the habitat restoration and protection projects combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the lack of impacts from alternative D would result in negligible cumulative impacts on the mission blue butterfly.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Conzelman Coastal Trail, from Highway 1/101 to the McCullough intersection and then to the Coastal Trail Bike Route, including Julian Road to Rodeo Beach parking lot. On-leash dog walking would also be available on the Old Bunker Fire Road Loop (which includes a section of the Coastal trail), Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, Marin Drive, Rodeo Avenue Trail, and Morning Sun Trail. Dogs would not be allowed on the section of North Miwok Trail where mission blue butterfly habitat exists, but on-leash dog walking would be allowed on these perimeter trails in the Marin Headlands Trails and along the Coastal Trail (Julian Road), which supports mission blue butterfly habitat in some areas. Alternative E would result in long-term minor adverse impacts on the mission blue butterfly in the LOD area at the Marin Headlands Trails. Through digging, trampling, and nutrient addition from dog waste, dogs would continue to cause perceptible damage to mission blue butterfly habitat along the trail bed as a result of damage to the vegetation from dogs, as well as the potential introduction of non-native plant species, as described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

The long-term minor adverse impacts from dogs in the LOD area under alternative E would occur in a relatively small area when compared to the site as a whole. However, more trails would be available to dogs in comparison to alternative C, including portions of the Coastal Trail in the easternmost area of Marin Headlands Trails that support mission blue butterfly habitat. Therefore, assuming compliance, the overall impacts on the mission blue butterfly from on-leash dog walking would be long term, minor, and adverse because a measurable or perceptible change in mission blue butterfly habitat could occur as a result of dog disturbance. These impacts on mission blue butterfly habitat would be considered perceptible changes, but localized at the site and therefore minor.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Marin Headlands Trails is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. The long-term minor adverse impacts on the mission blue butterfly from dogs at the Marin Headlands Trails under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the habitat restoration and protection projects should reduce some of the adverse impacts on the mission blue butterfly from alternative E; however, the effects from the fire management activities, maintenance operations, and other agency projects on mission blue butterfly habitat would be adverse. When combined, the beneficial and adverse

effects from these projects may balance out. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on the mission blue butterfly under this alternative would be expected to be long term, minor, and adverse.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	On-leash dogs would be allowed only on the perimeter trails, which would maintain the integrity of interior habitat; no dogs would be allowed on the North Miwok Trail but dogs would be allowed on leash on the sections of the Coastal Trail, which supports mission blue butterfly habitat	No change, assuming compliance	Long-term minor adverse cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, which extends from the Rodeo Beach parking lot to the intersection of Bunker and McCullough roads via the North Lagoon Loop Trail, Miwok Trail, Rodeo Valley Trail, and the connector trail from Rodeo Valley Trail to the Smith Road trailhead. On-leash dog walking would be allowed on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), Batteries Loop Trail, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow on-leash dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. The LOD would include areas adjacent to the trails/roads up to 6 feet. Under the preferred alternative, dogs would not be allowed on the North Miwok Trail and the Coastal Trail bicycle route (which includes Julian Road, where mission blue butterfly habitat exists), and existing vegetation that supports the mission blue butterfly is not located along the trails/roads; therefore, there would be negligible impacts on the mission blue butterfly in the LOD area.

Because dogs would not be allowed on the North Miwok Trail and the hiking-only section of the Coastal Trail (Julian Road, where mission blue butterfly habitat exists), assuming compliance, overall negligible impacts on the mission blue butterfly would occur because of protection of habitat along the trails and roads of the Marin Headlands Trails. This alternative would not result in a measurable or perceptible change in mission blue butterfly habitat; therefore, impacts would remain negligible.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under the preferred alternative, permits would be issued to individual or commercial dog walkers to walk more than three dogs on a short segment of the North Lagoon Loop Trail. Allowing dog walkers with more than three dogs on the North Lagoon Loop Trail from the Rodeo Beach parking lot to the pedestrian bridge creates a loop with the permitted areas allowed under the preferred alternative for Rodeo Beach. Since commercial dog walking is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are

currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of the Marin Headlands Trails.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), the Southern Marin Headlands Project, Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in Marin County—all have the potential to beneficially affect the mission blue butterfly and its habitat in the Marin Headlands Trails. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species, and the plan is focused on the Marin Headlands Trails and Fort Baker. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside these locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements; restoring historic coastal scrub habitats by controlling non-native plants (e.g., gorse, French broom, pampas grass) that threaten the associated host and nectar plants used by the mission blue butterfly species, including silver-leaf lupine; and preventing further habitat degradation due to herbicides, pesticides, other toxicants, and off-road vehicle use (USFWS 1984). The Southern Marin Headlands Project initiated in the summer/fall of 2007, and completed in 2013, focused on enhancing the Coastal Trail corridor in the southern Marin Headlands and included removal of selected non-native trees that compromise the health of habitat used by the mission blue butterfly (GGNPC n.d., 1). Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as the Marin Headlands Trails. The park stewardship programs, the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (NPS 2009c, ix, 82), Marin County fire management activities, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat. Approximately 93 acres of habitat for the mission blue butterfly will be restored in the southern Marin Headlands to mitigate for impacts from road and trail construction that are a part of the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (GGNPC 2010d, 1).

The negligible impacts on the mission blue butterfly from dogs at the Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the negligible impacts from the preferred alternative would result in negligible cumulative impacts on the mission blue butterfly.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE F CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	On-leash dogs would be allowed only on the perimeter trails, which would maintain the integrity of interior habitat; prohibiting dogs on the North Miwok Trail and the hiking-only section of the Coastal Trail would protect habitat	Beneficial, assuming compliance	Negligible cumulative impacts

Fort Baker

Alternative A: No Action. The mission blue butterfly is known to occur at Fort Baker. Restoration of habitat for mission blue butterfly was initiated in 1990 (55 acres have been restored as of publication) and is still ongoing at the site. Dogs are currently required to be on leash throughout Fort Baker, except that dogs are not allowed on Chapel Trail (adjacent to mission blue butterfly habitat) or the pier. Drown Fire Road traverses natural habitat where extensive mission blue butterfly habitat restoration has occurred. Battery Yates has mission blue butterfly habitat that is partially fenced (post and cable), but this fencing would not physically exclude dogs. Dogs have been observed off leash at Battery Yates and behind the Bay Area Discovery Museum. It has been predicted that a marked increase in visitor use along the waterfront portion of this site is likely to occur as a result of upgrades to the waterfront along with the recently opened lodge and conference center. Documented leash law violations at this site totaled 52 from 2008 through 2011 and an additional 29 from 2012 to 2016 (tables 18a and 18b).

Alternative A would continue to result in long term, minor, adverse impacts on the mission blue butterfly at Fort Baker. Through digging, trampling, and nutrient addition from dog waste, dogs would continue to cause localized, perceptible damage to mission blue butterfly habitat in the trail beds, roads, and adjacent areas as a result of damage to the vegetation. Some disturbance, such as occasional digging, can help the mission blue butterfly host plant, lupine, colonize; however, if soils are compacted or the soil chemistry is altered from nutrient addition from dog waste, this could prevent colonization. Additionally, nonnative species are a large threat to lupine; dogs can act as vectors, carrying the seeds of non-native plant species into areas where they would not otherwise be. Because the impacts on mission blue butterfly habitat would be localized at the site, they are considered minor.

Under alternative A, no permit system exists for commercial dog walking. At Fort Baker, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in Marin County—all have the potential to beneficially affect the mission blue butterfly and its habitat at Fort Baker. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS

1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species, and the plan is focused on the Marin Headlands Trails and Fort Baker. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside these locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements; restoring historic coastal scrub habitats by controlling non-native plants (e.g., gorse, French broom, pampas grass) that threaten the associated host and nectar plants used by the mission blue butterfly species, including silver-leaf lupine; and preventing further habitat degradation due to herbicides, pesticides, other toxicants, and off-road vehicle use (USFWS 1984). The *Fort Baker EIS* (NPS 2008h) and habitat restoration programs will have beneficial effects through restoration and expansion of mission blue butterfly habitat and control of non-native vegetation. Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS; planned restoration of mission blue butterfly habitat as mitigation for the Golden Gate Bridge seismic retrofit work would continue to be implemented at Fort Baker (NPS 2008h, 4-28). These future restoration efforts would expand on this project, completing up to 23 acres of additional mission blue butterfly habitat restoration at Fort Baker (NPS 2008h, 4-28).

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Fort Baker is uncommon. However, the interim compendium amendment would have a slight beneficial effect on mission blue butterfly habitat by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from physical damage, increased potential for establishment of invasive plant species, and nutrient addition from dog waste.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as Fort Baker. The park stewardship programs, the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, Marin County fire management activities, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat.

The long-term minor adverse impacts on the mission blue butterfly from dogs at Fort Baker under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects and the interim permitting program should reduce some of the adverse impacts on the mission blue butterfly from alternative A. Even though the effects from the fire management activities, maintenance operations, and other agency projects on mission blue butterfly habitat would be adverse, the benefits from restoration actions at Fort Baker should mitigate these adverse impacts. Therefore, the cumulative impacts on the mission blue butterfly under this alternative would be expected to be negligible.

FORT BAKER ALTERNATIVE A CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Dogs could damage mission blue butterfly habitat in the trail beds and adjacent to the trails and roads; fencing for habitat protection would not exclude noncompliant dogs	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Drown Fire Road (which traverses mission blue butterfly habitat), the Vista Point Trail (to be built), the Bay Trail (not including Battery Yates Loop), the Lodge/Conference Center Grounds, and the Parade Ground. The LOD would include all areas adjacent to the trails/roads up to 6 feet. Dogs would no longer be allowed on the Battery Yates Loop under this alternative due to the presence of mission blue butterfly habitat, but dog walking would be allowed along Drown Fire Road, which traverses restored mission blue butterfly habitat. Therefore, long-term minor adverse impacts on the mission blue butterfly in areas adjacent to the trail (6-foot corridor or LOD area) would occur as a result of this alternative. The impacts would occur from dogs trampling and digging in soils and vegetation, through nutrient addition from dog waste, and the potential for dogs to introduce nonnative plants to native habitats, as described under alternative A.

Not allowing dogs on the Battery Yates Loop would protect existing mission blue butterfly habitat. However, alternative B would allow on-leash dog walking along Drown Fire Road, which supports mission blue butterfly habitat. Therefore, assuming compliance, alternative B would result in overall negligible to long-term minor adverse impacts on the mission blue butterfly. Prohibiting dogs at the Battery Yates Loop would reduce the opportunity for dogs to be in proximity to mission blue butterfly habitat, but allowing dogs on Drown Fire Road would result in perceptible changes, but localized at the site and therefore minor. Although much of the trail is fenced with post and cable fencing, host plants do grow along the shoulder of the fire road outside the fenced area along the edge of the trail.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in Marin County—all have the potential to beneficially affect the mission blue butterfly and its habitat at Fort Baker. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species, and the plan is focused on the Marin Headlands Trails and Fort Baker. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside these locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements; restoring historic coastal scrub habitats by controlling non-native plants (e.g., gorse, French broom, pampas grass) that threaten the associated host and nectar plants used by the mission blue butterfly species, including silver-leaf lupine; and preventing further habitat degradation due to herbicides, pesticides, other toxicants, and off-road vehicle use (USFWS 1984). The *Fort Baker EIS* (NPS 2008h) and habitat restoration programs will have beneficial effects through restoration and expansion of mission blue butterfly habitat and control of non-native vegetation. Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS; planned restoration of mission blue butterfly habitat as mitigation for the Golden Gate Bridge seismic retrofit work would continue to be implemented at Fort Baker (NPS 2008h, 4-28). These future restoration efforts would expand on this project, completing up to 23 acres of additional mission blue butterfly habitat restoration at Fort Baker (NPS 2008h, 4-28).

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as Fort Baker. The park stewardship programs, the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, Marin County fire management activities, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat.

The negligible impacts on the mission blue butterfly from dogs at Fort Baker under alternative B were considered together with the effects of the projects mentioned above. Even though the effects from the fire management activities, maintenance operations, and other agency projects on mission blue butterfly habitat would be adverse, the benefits from restoration actions at Fort Baker should mitigate these adverse impacts. Therefore, the cumulative impacts on the mission blue butterfly under this alternative would be expected to be negligible.

FORT BAKER ALTERNATIVE B CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Allowing dogs along Drown Fire Road would affect butterfly habitat, but impacts would be localized at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking on Drown Fire Road (which traverses mission blue butterfly habitat), the Bay Trail (including Battery Yates Loop, which is adjacent to mission blue butterfly habitat), the Vista Point Trail (to be built), the Lodge/Conference Center Grounds, and the Parade Ground. On-leash dog walking would be based on an allowed 6-foot dog leash. The LOD would include all areas adjacent to the trails/roads up to 6 feet. Under this alternative, dogs would be allowed along Drown Fire Road and the Battery Yates Loop, which support mission blue butterfly habitat. Therefore, long-term minor adverse impacts on the mission blue butterfly in areas adjacent to the trail (6-foot corridor or LOD area) would occur as a result of this alternative. Mission blue butterfly habitat would be affected by on-leash dogs through trampling, digging, dog waste, and introduction of nonnative species and would result in perceptible changes in the habitat.

Alternative C allows on-leash dog walking along Drown Fire Road and the Battery Yates Loop, which support mission blue butterfly habitat. Therefore, assuming compliance, alternative C would result in overall negligible to long-term minor adverse impacts on the mission blue butterfly; allowing dogs on the Drown Fire Road and the Battery Yates Loop would result in perceptible changes to mission blue butterfly habitat, but these impacts would localized at the site and would therefore be considered minor, at most.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs, and the permit may restrict use by time and area. Permits would be allowed at Fort Baker, excluding Drown Fire Road. Impacts on the mission blue butterfly from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Under alternative C, the cumulative impacts on the mission blue butterfly at this park site would be the same as those under alternative B: negligible.

FORT BAKER ALTERNATIVE C CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Allowing dogs along Drown Fire Road would affect butterfly habitat, but impacts would be localized at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking on the Lodge/Conference Center Grounds, the Vista Point Trail (to be built), and on the Bay Trail. Dogs would not be allowed on the Battery Yates Loop or along Drown Fire Road under this alternative, due to the presence of mission blue butterfly habitat. The LOD would include all areas adjacent to the trail up to 6 feet. No impact on the mission blue butterfly in areas adjacent to the trail (6-foot corridor or LOD area) would occur as a result of this alternative.

Not allowing dogs on the Battery Yates Trail or along Drown Fire Road would protect mission blue butterfly habitat in the site as a whole. Therefore, assuming compliance, alternative D would result in no overall impacts on the mission blue butterfly. Prohibiting dogs at the Battery Yates Trail and Drown Fire Road would eliminate the opportunity for dogs to be in proximity to mission blue butterfly habitat, resulting in no measurable or perceptible change in mission blue butterfly habitat; therefore, no impact would occur.

No commercial dog walking or permits to walk more than three dogs would be allowed under alternative D; therefore, commercial or permitted dog walking would have no impact on the mission blue butterfly.

Cumulative Impacts. The negligible impacts on the mission blue butterfly from dogs at Fort Baker under alternative D were considered together with the effects of the projects mentioned above under alternative B. Even though the effects from the fire management activities, maintenance operations, and other agency projects on mission blue butterfly habitat would be adverse, the benefits from restoration actions at Fort Baker should mitigate these adverse impacts. Therefore, the cumulative impacts on the mission blue butterfly under this alternative would be expected to be negligible.

FORT BAKER ALTERNATIVE D CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No overall impacts, assuming compliance	Prohibiting dogs on the Battery Yates Trail and Drown Fire Road would provide additional protection of mission blue butterfly habitat	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same: long term, minor, and adverse in the LOD area and negligible to long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk

more than three dogs on leash, with a limit of six dogs, and the permit may restrict use by time and area. Permits would be allowed at Fort Baker, excluding Drown Fire Road. Impacts on the mission blue butterfly from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Under alternative E, the cumulative impacts on the mission blue butterfly at this park site would be the same as those under alternative C: negligible.

FORT BAKER ALTERNATIVE E CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Allowing dogs along Drown Fire Road would affect butterfly habitat, but impacts would be localized at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Bay Trail (including Battery Yates Loop), the Lodge/Conference Center Grounds, the Parade Ground, Fort Baker Trail between Somerville Road and East Road, and the parking lots at the Bay Area Discovery Museum and connecting trails. The LOD would include all areas adjacent to the trails/roads up to 6 feet. The LOD would include all areas adjacent to the trails/roads up to 6 feet. Under this alternative, dogs would be allowed along the Battery Yates Loop, which support mission blue butterfly habitat. Mission blue butterfly habitat would be affected in the LOD by on-leash dogs through trampling, digging, dog waste, and introduction of nonnative species and would result in perceptible changes in the habitat. Therefore, long-term minor adverse impacts on the mission blue butterfly in areas adjacent to the trail (6-foot corridor or LOD area) would occur as a result of this alternative.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs, and the permit may restrict use by time and area. Permits would be allowed in all of the same areas except the lands and trails surrounding the Cavallo Point Lodge. Impacts on the mission blue butterfly from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in Marin County—all have the potential to beneficially affect the mission blue butterfly and its habitat at Fort Baker. Additionally, controlled burns will be conducted to

help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species, and the plan is focused on the Marin Headlands Trails and Fort Baker. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside these locations through cooperative agreements with adjacent landowners and purchase of conservation easements or similar land conservation agreements; restoring historic coastal scrub habitats by controlling non-native plants (e.g., gorse, French broom, pampas grass) that threaten the associated host and nectar plants used by the mission blue butterfly species, including silver-leaf lupine; and preventing further habitat degradation from herbicides, pesticides, other toxicants, and off-road vehicle use (USFWS 1984).

The *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan* (NPS 2009c) will have beneficial impacts on the mission blue butterfly. Plans include removing non-native trees within areas directly adjacent to mission blue butterfly habitat and within predicted habitat, closing and restoring areas containing known habitat, installing fencing and signage to make visitors aware of mission blue butterfly habitat, and removing target non-native plants within mission blue butterfly habitat (NPS 2009c, 229-242).

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as Fort Baker. The park stewardship programs, Marin County fire management activities, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat.

The negligible to long-term minor adverse impacts on the mission blue butterfly from dogs at Fort Baker under the preferred alternative were considered together with the effects of the projects mentioned above. Even though the effects from the fire management activities, maintenance operations, and other agency projects on mission blue butterfly habitat would be adverse, the benefits from restoration actions at Fort Baker should mitigate these adverse impacts. Therefore, the cumulative impacts on the mission blue butterfly under this alternative would be expected to be negligible.

FORT BAKER PREFERRED ALTERNATIVE F CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Allowing dogs along Drown Fire Road would affect butterfly habitat, but impacts would be localized at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Milagra Ridge

Alternative A: No Action. The mission blue butterfly is known to at Milagra Ridge; an area referred to as the "Mission Blue Butterfly Corridor" is located in portions of this site (NPS 2005c), including a portion of the fire road and the trail to the overlook and the WW II bunker. Under current conditions, dogs are allowed on leash on the fire road and the trails, including the trail to access the overlook and WW II bunker and the Milagra Battery Trail. This site has documented low visitor use by bicyclists, walkers, and hikers, and high visitor use by dog walkers (table 10). Leash law violations totaled 35 from 2008 through 2011, with an additional 10 violations between 2012 and 2016 (tables 28a and 28b).

Alternative A would continue to result in long-term minor adverse impacts on the mission blue butterfly. Through digging, trampling, and nutrient addition from dog waste, dogs would continue to cause localized, perceptible damage to mission blue butterfly habitat in the trail beds, roads, and adjacent areas as a result of damage to the vegetation. Some disturbance, such as occasional digging, can help the mission blue butterfly host plant, lupine, colonize; however, if soils are compacted or the soil chemistry is altered from nutrient addition from dog waste, this could prevent colonization. Additionally, nonnative species are a large threat to lupine; dogs can act as vectors, carrying the seeds of non-native plant species into areas where they would not otherwise be. Even though impacts would be localized in a relatively small area, the reproductive success of individuals may also be affected as an indirect result of impacts on mission blue butterfly habitat.

Under alternative A, no permit system exists for commercial dog walking. At Milagra Ridge, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in San Mateo County—all have the potential to beneficially affect the mission blue butterfly and its habitat at Milagra Ridge. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Additionally, the site management plan for Milagra Ridge includes a statement to protect and enhance the habitat of the mission blue butterfly in coordination with GGNRA (NPS) and USFWS.

Fragments of unique plant and animal habitats within Pacifica, known as Significant Natural Resource Areas (natural areas), have been preserved within the parks that are managed by the San Francisco Recreation and Park Department (SFRPD). The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years (SFPD 2011, 1). The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica and addresses dog walking (including on-leash dog walking and off-leash DPAs) in these areas (SFPD 2011, 261-262). The mission blue butterfly has been recorded at Sharp Park (SFPD 2011, 278), which is a natural area located near Milagra Ridge and managed under the SNRAMP. Project activities included in the SNRAMP will protect this listed species and provide long-term beneficial impacts to the mission blue butterfly.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as Milagra Ridge. The park stewardship programs, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat.

The long-term minor adverse impacts on the mission blue butterfly from dogs at Milagra Ridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects as well as the SNRAMP should reduce some of the adverse impacts on the mission blue butterfly from alternative A; however, the effects on mission blue butterfly habitat from the fire management activities, maintenance operations, and other agency projects would be adverse. When combined, the beneficial and adverse effects from these projects may balance out. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on the mission blue butterfly under this alternative would be expected to be long term, minor, and adverse.

MILAGRA RIDGE ALTERNATIVE A CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Dogs could damage mission blue butterfly habitat in the trail beds and adjacent to the trails and roads	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the fire road and the trails to the overlook and WW II bunker, as well as the Milagra Battery Trail. However, the trail to the top of the hill would not be open for dog walking in this alternative. On-leash dog walking would be based on an allowed 6-foot dog leash. The LOD would include areas adjacent to the trails/roads up to 6 feet, including the Milagra Ridge Road and trails where mission blue butterfly is known to occur. Impacts on areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor, and adverse. Dogs could impact vegetation that supports the mission blue butterfly along the trail through trampling, digging, dog waste, and the introduction of nonnative species.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, assuming compliance, the overall impact on the mission blue butterfly from on-leash dog walking at Milagra Ridge would be negligible.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. The negligible impacts on the mission blue butterfly from dogs at Milagra Ridge under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the habitat restoration and protection projects as well as the SNRAMP combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the negligible impacts from alternative B would result in negligible cumulative impacts on the mission blue butterfly.

MILAGRA RIDGE ALTERNATIVE B CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect mission blue butterfly habitat off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking in the same areas as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Under alternative C, the cumulative impacts on the mission blue butterfly at Milagra ridge would be the same as those under alternative B: negligible.

MILAGRA RIDGE ALTERNATIVE C CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect mission blue butterfly habitat off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would not allow dogs at this site and would therefore result in no impact on the mission blue butterfly, assuming compliance.

Since dogs would not be allowed at Milagra Ridge, there would be no impact from commercial dog walkers on the mission blue butterfly.

Cumulative Impacts. The lack of impacts on the mission blue butterfly from dogs at Milagra Ridge under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the habitat restoration and protection projects as well as the SNRAMP combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the lack of impacts from alternative D would result in negligible cumulative impacts on the mission blue butterfly.

MILAGRA RIDGE ALTERNATIVE D CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails as alternative B, with the addition of a trail to the top of the hill, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Under alternative E, the cumulative impacts on the mission blue butterfly would be the same as those under alternative B: negligible.

MILAGRA RIDGE ALTERNATIVE E CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative E, allowing on-leash dog walking on the fire road, the trails to the overlook and WW II bunker, the Milagra Battery Trail, and the trail to the top of the hill. The LOD would include areas adjacent to the trails/roads up to 6 feet, including the Milagra Ridge Road and other trails where the mission blue butterfly is known to occur. Impacts on areas adjacent to the trails (6-foot corridor or LOD area) would be long term, minor. Dogs could impact vegetation that supports the mission blue butterfly along the trail through trampling, digging, dog waste, and the introduction of nonnative species.

The long-term minor adverse impacts from dogs in the LOD would occur in a relatively small area when compared to the site as a whole; therefore, the overall impacts on the mission blue butterfly from on-leash dog walking at Milagra Ridge would be negligible, assuming compliance.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in San Mateo County—all have the potential to beneficially affect the mission blue butterfly and its habitat at Milagra Ridge. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Additionally, the site management plan for Milagra Ridge includes a statement to protect and enhance the habitat of the mission blue butterfly in coordination with the GGNRA and USFWS.

Fragments of unique plant and animal habitats within Pacifica, or natural areas, have been preserved within the parks that are managed by the San Francisco Recreation and Park Department (SFRPD). The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years (SFPD 2011, 1). The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica and addresses dog walking (including on-leash dog walking and off-leash DPAs) in these areas (SFPD 2011, 261-262). The mission blue butterfly has been recorded at Sharp Park (SFPD 2011, 278), which is a natural area located near Milagra Ridge and managed under the SNRAMP. Project activities included in the SNRAMP will protect this listed species and provide long-term beneficial impacts to the mission blue butterfly.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as Milagra Ridge. The park stewardship programs, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat.

The negligible impacts on the mission blue butterfly from dogs at Milagra Ridge under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects as well as the SNRAMP combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the negligible impacts from the preferred alternative would result in negligible cumulative impacts on the mission blue butterfly.

MILAGRA RIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Sweeney Ridge/Cattle Hill

Alternative A: No Action. The mission blue butterfly is known to occur along the Notch Trail at Sweeney Ridge and the host plants are known to occur in other areas at Sweeney Ridge (USFWS 1995, 3), including along Sweeney Ridge Trail, Baquiano Trail, Sweeney Horse Trail, and Meadow Loop Trail (May & Associates, Inc. 2006). Under current conditions, the Notch Trail is closed to dogs but on-leash dog walking is allowed on all other trails at Sweeney Ridge, including Sweeney Ridge Trail, Sneath Lane, and Baquiano Trail. With the exception of Sneath Lane, mission blue butterfly host plants have been mapped along all trails open to dog walking in Sweeney Ridge. Sweeney Ridge has documented low to moderate use by dog walkers, and off-leash incidents totaled 115 from 2008 through 2011, with an additional 11 violations between 2012 and 2016 (tables 29a and 29b).

Alternative A would continue to result in long-term minor adverse impacts on the mission blue butterfly at Sweeney Ridge. Through digging, trampling, and nutrient addition from dog waste, dogs would continue to cause localized, perceptible damage to mission blue butterfly habitat in the trail beds, roads, and adjacent areas as a result of direct and indirect damage to the vegetation. Some disturbance, such as occasional digging, can help the mission blue butterfly host plant, lupine, colonize; however, if soils are compacted or the soil chemistry is altered from nutrient addition from dog waste, this could prevent colonization. Additionally, nonnative species are a large threat to lupine; dogs can act as vectors, carrying the seeds of non-native plant species into areas where they would not otherwise be. Even though impacts would be localized in a relatively small area, the reproductive success of individuals may also be affected as an indirect result of impacts on mission blue butterfly habitat.

No mission blue butterfly habitat exists at Cattle Hill; the host plants were not identified at the site (NRM Environmental Consulting, 2; URS Corporation 2010, Figure 6). Therefore, at Cattle Hill there would be no impacts to the mission blue butterfly.

Under alternative A, no permit system for commercial dog walking exists. Commercial dog walking is uncommon at Sweeney Ridge; therefore, commercial dog walking would have negligible impacts on the mission blue butterfly at this site.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in San Mateo County—all have the potential to beneficially affect the mission blue butterfly and its habitat at Sweeney Ridge. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS.

Fragments of unique plant and animal habitats within Pacifica, or natural areas, have been preserved within the parks that are managed by the San Francisco Recreation and Park Department (SFRPD). The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years (SFPD 2011, 1). The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica and addresses dog walking (including on-leash dog walking and off-leash DPAs) in these areas (SFPD 2011, 261-262). The mission blue butterfly has been recorded at Sharp Park (SFPD 2011, 278), which is a natural area located adjacent to Sweeney Ridge and managed under the SNRAMP. Project activities included in the SNRAMP will protect this listed species and provide long-term beneficial impacts to the mission blue butterfly.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as Sweeney Ridge. The park stewardship programs, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat.

The long-term minor adverse impacts at Sweeney Ridge on the mission blue butterfly from dogs under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects as well as the SNRAMP should reduce some of the adverse impacts on the mission blue butterfly from alternative A. However, the effects from the fire management activities, maintenance operations, and other agency projects on mission blue butterfly habitat would be adverse. When combined, the beneficial and adverse effects from these projects may balance out. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on the mission blue butterfly under this alternative at Sweeney Ridge would be expected to be long term, minor, and adverse. The lack of impacts to the mission blue butterfly at Cattle Hill was considered with the above cumulative effects, resulting in overall negligible cumulative impacts at Cattle Hill.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE A CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts at Sweeney Ridge	Dogs could damage mission blue butterfly habitat in the trail beds and adjacent to the trails and roads	N/A	Long-term minor adverse cumulative impacts at Sweeney Ridge
No impact at Cattle Hill	Mission blue butterfly host plants are not present at Cattle Hill	N/A	Negligible cumulative impacts at Cattle Hill

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs at both sites, which would provide a large area of relatively undisturbed contiguous habitat that supports the listed mission blue butterfly. Therefore, assuming compliance, alternative B would result in no impact on the mission blue butterfly because of protection of mission blue butterfly habitat at Sweeney Ridge. Alternative B would also result in no impacts to the mission blue butterfly at Cattle Hill because suitable habitat has not been documented at this site to date (NRM Environmental Consulting 2007, 2; URS Corporation 2010, Figure 6).

Since dogs would not be allowed at Sweeney Ridge/Cattle Hill, there would be no impact from commercial dog walkers on the mission blue butterfly at this site.

Cumulative Impacts. The lack of impacts on the mission blue butterfly from dogs at Sweeney Ridge/ Cattle Hill under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the habitat restoration and protection projects as well as the SNRAMP combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the lack of impacts from alternative B would result in negligible cumulative impacts on the mission blue butterfly.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE B CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance (at both sites)	Dogs would be prohibited at both sites	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, no dog walking would be allowed at Sweeney Ridge. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to and including the Farallon View Trail. However, recent habitat surveys indicate that mission blue butterfly host plants are not present at Cattle Hill (NRM Environmental Consulting 2007, 2; URS Corporation 2010, Figure 6). Therefore, there would be no impact on the mission blue butterfly since there is no mission blue butterfly habitat at Cattle Hill and no dogs would be allowed at Sweeney Ridge, which supports mission blue butterfly habitat along the majority of trails at the site (May & Associates, Inc. 2006).

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since dog walking would not be allowed at Sweeney Ridge, commercial dog walking under alternative C would have no impact on the mission blue butterfly. Since there is no mission blue butterfly habitat at Cattle Hill there would be no impact on the mission blue butterfly from commercial dog walkers.

Cumulative Impacts. Under alternative C, the cumulative impacts on the mission blue butterfly would be the same as those under alternative B: negligible.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE C CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance (at both sites)	Dogs would be prohibited at Sweeney Ridge; no mission blue butterfly habitat exists at Cattle Hill	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. This alternative would have the same dog walking restrictions as described for alternative B, and impacts would be the same: no impact.

Since dogs would not be allowed at Sweeney Ridge/Cattle Hill, there would be no impact from commercial dog walkers on the mission blue butterfly.

Cumulative Impacts. The lack of impacts on the mission blue butterfly from dogs at Sweeney Ridge/ Cattle Hill under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the habitat restoration and protection projects as well as the SNRAMP combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the lack of impacts from alternative D would result in negligible cumulative impacts on the mission blue butterfly.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE D CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance (at both sites)	Dogs would be prohibited at both sites	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking at Sweeney Ridge on Sneath Lane, on the Sweeney Ridge Trail from the Portola Discovery site to Notch Trail, and on to the junction with Mori Ridge Trail; the Notch Trail would remain closed to dogs. At Cattle Hill, dogs would be allowed on leash on the Baquiano Trail from Fassler Avenue up to and including the Farallon View Trail; recent habitat surveys indicate that mission blue butterfly host plants are not present at Cattle Hill (NRM Environmental Consulting 2007, 2; URS Corporation 2010, Figure 6). However, the mission blue butterfly is known to occur along the Notch Trail at Sweeney Ridge and the host plants are known to occur in other areas at Sweeney Ridge (USFWS 1995, 3) that would be open to dog walking under alternative E, specifically, Sweeney Ridge Trail (May & Associates, Inc. 2006). The LOD would include areas adjacent to the trails/roads up to 6 feet. Impacts on areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor, and adverse at Sweeney Ridge since existing vegetation that supports the mission blue butterfly is located along the trail and could be damaged as a result of dogs through trampling, digging, dog waste, and the introduction of nonnative species, as described under alternative A.

The long-term minor adverse impacts from dogs in the LOD would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on the mission blue butterfly from on-leash dog walking at Sweeney Ridge would be negligible, assuming compliance. There would be no impact on the mission blue butterfly at Cattle Hill since there is no mission blue butterfly habitat at this site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Sweeney Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the mission blue butterfly at Sweeney Ridge. There would be no impact on the mission blue butterfly at Cattle Hill from commercial dog walkers since there is no mission blue butterfly habitat at this site.

Cumulative Impacts. The negligible impacts on the mission blue butterfly from dogs at Sweeney Ridge under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the habitat restoration and protection projects as well as the SNRAMP combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the negligible impacts from alternative E at Sweeney Ridge would result in negligible cumulative impacts on the mission blue butterfly.

The lack of impacts on the mission blue butterfly from dogs at Cattle Hill under alternative E was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the habitat restoration and protection projects combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the lack of impacts from alternative E at Cattle Hill would result in negligible cumulative impacts on the mission blue butterfly.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE E CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts at Sweeney Ridge, assuming compliance	Physically restraining dogs would protect mission blue habitat off trail; trails and the LOD area are a small portion of the site at Sweeney Ridge	Beneficial, assuming compliance	Negligible cumulative impacts
No impact at Cattle Hill, assuming compliance	No mission blue butterfly habitat exists at Cattle Hill	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. On-leash dog walking would be allowed at Sweeney Ridge on Sneath Lane and Sweeney Ridge Trail between the Portola Discovery site and the Nike Missile Site. On-leash dog walking would be allowed at Cattle Hill on Baquiano Trail from Fassler Avenue up to and including Farallon View Trail. Recent habitat surveys indicate that mission blue butterfly host plants are not present at Cattle Hill (NRM Environmental Consulting 2007, 2; URS Corporation 2010, Figure 6). Therefore, there would be no impact on the mission blue butterfly at Cattle Hill since there is no mission blue butterfly habitat at this site. The mission blue butterfly is known to occur along the Sweeney Ridge Trail (May & Associates, Inc. 2006), which would be open to dog walking under the preferred alternative. The LOD would include areas adjacent to the trails/roads up to 6 feet. Impacts on areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor, and adverse at Sweeney Ridge since existing vegetation that supports the mission blue butterfly is located along the trail and could be damaged as a result of dogs through trampling, digging, dog waste, and the introduction of nonnative species, as described under alternative A.

The long-term minor adverse impacts from dogs in the LOD would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on the mission blue butterfly from on-leash dog walking at Sweeney Ridge would be negligible, assuming compliance. There would be no impact on the mission blue butterfly at Cattle Hill since there is no mission blue butterfly habitat at this site.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since dog walking would not be allowed at Sweeney Ridge, commercial dog walking under alternative C would have no impact on the mission blue butterfly. Since there is no mission blue butterfly habitat at Cattle Hill there would be no impact on the mission blue butterfly from commercial dog walkers.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge/Cattle Hill were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site.

The *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), Wildland/Urban Interface Initiative projects, habitat restoration programs, ongoing monitoring, and volunteer

opportunities sponsored by the park—such as efforts with the Golden Gate National Parks Conservancy to restore mission blue butterfly habitat in San Mateo County—all have the potential to beneficially affect the mission blue butterfly and its habitat at Sweeney Ridge. Additionally, controlled burns will be conducted to help restore mission blue butterfly habitat through beneficial ecological disturbance effects (NPS 2009d, 1–2). The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS.

Fragments of unique plant and animal habitats within Pacifica, or natural areas, have been preserved within the parks that are managed by the SFRPD. The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years (SFPD 2011, 1). The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica and addresses dog walking (including on-leash dog walking and off-leash DPAs) in these areas (SFPD 2011, 261-262). The mission blue butterfly has been recorded at Sharp Park (SFPD 2011, 278), which is a natural area located adjacent to Sweeney Ridge and managed under the SNRAMP. Project activities included in the SNRAMP will protect this listed species and provide long-term beneficial impacts to the mission blue butterfly.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the mission blue butterfly and its habitat at or in the vicinity of GGNRA sites such as Sweeney Ridge/Cattle Hill. The park stewardship programs, maintenance operations, and other agency projects may have moderate short- and/or long-term adverse impacts associated with them that would require mitigation to minimize effects on mission blue butterfly habitat.

The negligible impacts from dogs on the mission blue butterfly at Sweeney Ridge were considered together with the above projects. The beneficial effects from the habitat restoration and protection projects combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the negligible impacts from the preferred alternative at Sweeney Ridge would result in negligible cumulative impacts on the mission blue butterfly.

The lack of impacts on the mission blue butterfly from dogs at Cattle Hill under the preferred alternative was considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects as well as the SNRAMP combined with the adverse effects from the fire management activities, maintenance operations, and other agency projects and the lack of impacts from the preferred alternative would result in negligible cumulative impacts on the mission blue butterfly at Cattle Hill.

SWEENEY RIDGE/CATTLE HILL PREFERRED ALTERNATIVE F CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts at Sweeney Ridge, assuming compliance	Physically restraining dogs would protect mission blue habitat off trail; trails and the LOD area are a small portion of the site at Sweeney Ridge	Beneficial, assuming compliance	Negligible cumulative impacts
No impact at Cattle Hill, assuming compliance	No mission blue butterfly habitat exists at Cattle Hill	Beneficial, assuming compliance	Negligible cumulative impacts

Rancho Corral de Tierra

Alternative A: No Action. Currently, on-leash dog walking is allowed at Rancho Corral de Tierra. Some areas of the Rancho site are dominated by coastal scrub, chaparral, and grassland vegetation along the trails that allow on-leash dog walking. In the Montara area, patches of mission blue butterfly host plants (*Lupinus variicolor*) exist above Old San Pedro Road. Of the three lupine host plant species, *Lupinus variicolor* is the least favored, but is still important to the life cycle of the mission blue butterfly. Suitable breeding habitat for the mission blue butterfly also occurs in parts of the El Granada area at Rancho, including near Denniston Ridge Trail and near Montara Mountain (URS 2010, Figure 6). Staff regularly working at Rancho characterize use by dog walkers as moderate overall with moderate to high use in the Montara area; compliance with the leash law is generally low. At Rancho, NPS rangers have observed off-leash dogs running in areas with unmarked, potentially sensitive habitat, including within areas that support mission blue butterfly host plants in the Montara area.

Alternative A would continue to result in long-term minor adverse impacts on the mission blue butterfly at Rancho Corral de Tierra through damage to host plants and habitat, particularly areas along roads and adjacent areas, as a result of dogs. Through digging, trampling, and nutrient addition from dog waste, dogs would continue to cause localized, perceptible damage to mission blue butterfly habitat in the trail beds, roads, and adjacent areas as a result of damage to the vegetation. Some disturbance, such as occasional digging, can help the mission blue butterfly host plant, lupine, colonize; however, if soils are compacted or the soil chemistry is altered from nutrient addition from dog waste, this could prevent colonization. Additionally, nonnative species are a large threat to lupine; dogs can act as vectors, carrying the seeds of non-native plant species into areas where they would not otherwise be. These impacts on mission blue butterfly habitat would be considered perceptible changes, but localized at the site and therefore minor. According to information from the Montara Dog Group and subsequent staff observations, dog walkers, particularly off-leash dog walkers, primarily use the lower elevations of the site at both the Montara and El Granada areas. The terrain at El Granada is particularly steep and challenging, thus dog walking use in that area appears to be concentrated mostly in the lower elevations. Although the Montara area is less steep, visitor use there is similarly concentrated in the lower elevations, but some dog walkers in the Montara area do use trails that connect to the top of the Rancho site.

No permit system exists for dog walking under alternative A. Commercial dog walkers typically use the El Granada area off of Coral Reef Avenue; however, commercial dog walking is considered a low use at the site overall. Therefore, commercial dog walking would have negligible impacts on the mission blue butterfly at this site.

Cumulative Impacts. Projects and actions in and near Rancho Corral de Tierra were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site. Since the Rancho Corral de Tierra site has been transferred to the NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking.

The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS. Since the mid-1980s, restoration work has been ongoing at San Bruno Mountain, which has habitat that supports the mission blue butterfly and is located just north of Rancho Corral de Tierra. The San Bruno

Mountain Habitat Conservation Plan (HCP) requires restoration of graded or disturbed lands to meet the primary goal of establishing high quality habitat for the mission blue butterfly as well as the Callippe silverspot (*Speyeria callippe callippe*) (San Mateo County Department of Public Works and Parks 2013, 16). Most recently, the restoration of the Northeast Ridge at San Bruno Mountain for the mission blue butterfly was initiated in 2012 (San Mateo County Department of Public Works and Parks 2013, 15). Since the Rancho Corral de Tierra site has been transferred to NPS, general maintenance and protection of the site and associated natural resources would occur, but currently the park has no site-specific plans to restore host plants for the mission blue butterfly. The effects from future construction projects, maintenance operations, and other agency projects on mission blue butterfly habitat may be adverse, but these actions have not yet been identified and are currently unknown and would likely require mitigation.

The long-term minor adverse impacts on the mission blue butterfly from dogs at Rancho Corral de Tierra under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection projects should reduce some of the adverse impacts on the mission blue butterfly from alternative A. Even though the effects from other construction projects, maintenance operations, and other agency projects on mission blue butterfly habitat may be adverse they are relatively unknown at the time, and the benefits from restoration actions at San Bruno Mountain should mitigate these adverse impacts. Therefore, the cumulative impacts on the mission blue butterfly under this alternative would be expected to be negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE A CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Dogs could damage mission blue butterfly habitat located adjacent to roads; off-leash dogs have been observed in areas that support host plants	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. On-leash dog walking would be allowed on designated trails in two areas open to dog walking near Montara and El Granada, which were identified by the local dog walking group as key areas for this use. Mission blue butterfly host plants are known to near the Old San Pedro Road in the Montara area that would be open to dog walking under alternative B. The LOD would include areas adjacent to the trails/roads up to 6 feet. Impacts on areas adjacent to the trail (6-foot corridor or LOD area) would be negligible since existing vegetation that supports the mission blue butterfly is located beyond the road. The negligible impacts from dogs in the LOD would occur in a relatively small area when compared to the site as a whole. Mission blue butterfly breeding habitat also occurs in El Granada near Denniston Ridge Trail; however, this habitat is beyond the LOD and would not be impacted by dogs, assuming compliance. Under alternative B, physically restraining dogs would protect mission blue butterfly host plants in areas near Old San Pedro Road. The overall impact on the mission blue butterfly from on-leash dog walking at Rancho Corral de Tierra would be negligible, assuming compliance.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. The negligible impacts on the mission blue butterfly habitat from dogs at Rancho Corral de Tierra under alternative B were considered together with the effects of the projects mentioned under alternative A. The anticipated beneficial effects from other restoration plans combined with other construction projects, maintenance operations, and other agency projects on mission blue butterfly habitat which may be adverse are relatively unknown at the time. Therefore, the negligible impacts on the mission blue butterfly habitat from alternative B would result in negligible cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE B CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect mission blue butterfly habitat off the road; trails/road and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed on the same trails as alternative B within two areas open to dog walking at Rancho Corral de Tierra in the Montara and El Granada areas. A VSCA is also proposed under alternative C in the Montara area between Le Conte Street and Tamarind Street, in an open grassy area near the Farallone View School. The proposed VSCA is not located within habitat that supports mission blue butterfly host plants. Therefore, alternative C would have the same impacts as alternative B: overall negligible, assuming compliance.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking under this alternative would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Under alternative C, the cumulative impacts on the mission blue butterfly at this park site would be the same as those under alternative B: negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE C CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect mission blue butterfly habitat off the road; trails/road are a small portion of the site; host plants do not occur within or near VSCA	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed in the Montara area on two trails that allow dog walking: Old San Pedro Mountain Road and the Farallon Cutoff. Dogs would be prohibited in other areas of the site, including the entire El Granada area. If dogs are physically restrained on leash at Montara on two trails open to dog walking under alternative D, they should not gain access to mission blue butterfly host plants. Impacts on areas adjacent to the trail (6-foot corridor or LOD area) would be negligible since existing vegetation that supports the mission blue butterfly is located beyond the Old San Pedro Mountain Road.

The negligible impacts from dogs in the LOD would occur in a relatively small area when compared to the site as a whole. Under alternative D, physically restraining dogs would protect mission blue butterfly host plants in areas near Old San Pedro Road. The overall impact on the mission blue butterfly from on-leash dog walking at Rancho Corral de Tierra would be negligible, assuming compliance.

Since no commercial dog walking would be allowed and no permits for walking more than three dogs would be issued under alternative D, no impact on the mission blue butterfly from commercial and permitted dog walking would occur.

Cumulative Impacts. Under alternative D, the cumulative impacts on the mission blue butterfly at this park site would be the same as those under alternative B: negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE D CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect mission blue butterfly habitat off the road; trails/road and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same: overall negligible, assuming compliance.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Currently, Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Under alternative E, the cumulative impacts on the mission blue butterfly at this park site would be the same as those under alternative B: negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE E CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect mission blue butterfly habitat off the road; trails/road are a small portion of the site; host plants do not occur within or near VSCA	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on designated trails in three areas. Trails in Montara include Old San Pedro Mountain Road, LeConte Trail, Corona Pedro Trail, and Farallon Cutoff from the park boundary in the west to the intersection with Corona Pedro Trail. On-leash trails in the El Granada area include the Denniston Ridge Trail between the San Carlos Trail and its intersection with the Clipper Ridge Trail, the Clipper Ridge Trail, the Memorial Loop, the Almeria Trail, and the San Carlos Trail. In the Moss Beach area, on-leash dog walking would

be allowed on the Vincente Ridge and Ranchette Trails. The preferred alternative would also establish a VSCA at Flat Top; however, the area is a former quarry site and does not support host plants for the Mission blue butterfly. Mission blue butterfly host plants are known to near the Old San Pedro Road that would be open to dog walking under the preferred alternative. The LOD would include areas adjacent to the trails/roads up to 6 feet. Impacts on areas adjacent to the trail (6-foot corridor or LOD area) would be negligible since existing vegetation that supports the mission blue butterfly is located beyond the road. The negligible impacts from dogs in the LOD would occur in a relatively small area when compared to the site as a whole Mission blue butterfly breeding habitat also occurs in El Granada near Denniston Ridge Trail; however, this habitat is beyond the LOD and would not be impacted by dogs, assuming compliance. Under the preferred alternative, physically restraining dogs would protect mission blue butterfly host plants in areas near Old San Pedro Road. The overall impact on the mission blue butterfly from on-leash dog walking at Rancho Corral de Tierra would be negligible, assuming compliance.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the mission blue butterfly.

Cumulative Impacts. Projects and actions in and near Rancho Corral de Tierra were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the mission blue butterfly at or in the vicinity of this site. Since the Rancho Corral de Tierra site has been transferred to the NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking.

The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. Management activities described in the plan that will benefit the mission blue butterfly include protecting essential habitat outside targeted park locations through cooperative agreements with adjacent landowners and negotiating conservation easements or similar land conservation agreements (USFWS 1984). Additional acreage of mission blue butterfly habitat will be restored under an agreement with USFWS. Since the mid-1980s, restoration work has been ongoing at San Bruno Mountain, which has habitat that supports the mission blue butterfly and is located just north of Rancho Corral de Tierra. The San Bruno Mountain Habitat Conservation Plan (HCP) requires restoration of graded or disturbed lands to meet the primary goal of establishing high quality habitat for the mission blue butterfly as well as the Callippe silverspot (San Mateo County Department of Public Works and Parks 2013, 16). Most recently, the restoration of the Northeast Ridge at San Bruno Mountain for the mission blue butterfly was initiated in 2012 (San Mateo County Department of Public Works and Parks 2013, 15). Since the Rancho Corral de Tierra site has been transferred to NPS, general maintenance and protection of the site and associated natural resources would occur, but the park currently has no site-specific plans to restore host plants for this species at Rancho. The effects from future construction projects, maintenance operations, and other agency projects on mission blue butterfly habitat may be adverse, but these actions have not yet been identified and are currently unknown and would likely require mitigation.

The negligible impacts on the mission blue butterfly habitat from dogs at Rancho Corral de Tierra under the preferred alternative were considered together with the effects of the projects mentioned above. The anticipated beneficial effects from other restoration plans combined with other construction projects, maintenance operations, and other agency projects on mission blue butterfly habitat which may be adverse are relatively unknown at the time. Therefore, the negligible impacts on the mission blue butterfly habitat from the preferred alternative would result in negligible cumulative impacts.

RANCHO CORRAL DE TIERRA PREFERRED ALTERNATIVE F CONCLUSION TABLE

Mission Blue Butterfly Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect mission blue butterfly habitat off the road; trails/road and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts

IMPACTS TO TIDEWATER GOBY (FEDERALLY ENDANGERED) BY SITE AND ALTERNATIVE

The tidewater goby is known to occur in high densities in Rodeo Lagoon in the Marin Headlands. In January 2008, the USFWS published a final rule re-designating critical habitat for the tidewater goby that included Rodeo Lagoon, described as critical habitat unit MAR-4 in the final rule (USFWS 2008, 5936, 5941). The *Recovery Plan for the Tidewater Goby* calls for protection and enhancement of currently occupied habitat, including managing freshwater inflow, non-native species, channelization, water quality, and human impacts; developing strategies to prevent further loss of habitat; and conducting research and monitoring (USFWS 2005a).

Rodeo Beach/South Rodeo Beach (Rodeo Lagoon)

Alternative A: No Action. In the vicinity of Rodeo Lagoon, dog walking is currently allowed under voice control or on leash at both Rodeo Beach and South Rodeo Beach. On-leash dog walking is allowed on the footbridge and access trail to the beach. Rodeo Lake is closed to dogs and is densely vegetated with willows along the shoreline, making access difficult. Rodeo Lagoon is currently closed to dogs and humans for overall resource protection. The NPS has restricted people and dogs from accessing the lagoon. However, there is no physical barrier to prevent dogs or visitors from accessing the lagoon, specifically at the beach–lagoon shoreline. A fence is proposed along the western shoreline of the lagoon that will deter but not physically exclude dogs from accessing the lagoon from the beach. A fence more impervious to dogs in this area is not feasible because winter storm waves wash over the entire beach, and wind-driven litter and debris would be trapped in the fence. The area receives low to moderate use by dog walkers. A total of 30 dog-related incidents were reported from 2008 through 2011, with 9 off-leash violations and 7 incidents involving pets within closed areas, and an additional 26 incidents reported from 2012 through 2016 (tables 16a and 16b). Additionally, park staff members have estimated that they observe dogs in the lagoon at least once a week, and on a daily basis during good weather. The voice control areas are located immediately adjacent to the shoreline of the lagoon and the lagoon is not screened and is highly visible and accessible. Because tidewater gobies are resident fish and complete their entire life cycle in Rodeo Lagoon, all life history stages could be affected by dogs that gain access to the lagoon. Specifically, the tidewater goby adults and embryos inhabit breeding burrows in shoreline areas of the lagoon. The park has observed that dogs frequently play and run around in the shallow water of the lagoon and inlet. Dogs along the shoreline of the lagoon could crush goby burrows or goby eggs. Frequent use of the shoreline areas may result in loss of emergent and/or submergent vegetation due to trampling. Loss of cover may increase the risk of predation on the goby. The population of tidewater gobies in Rodeo Lagoon is isolated from other populations and is genetically distinct (Dawson et al. 2001, 4). Even so, impacts on the goby would be localized along the western edge of the lagoon, where dogs sometimes come off the beach into the lagoon; therefore, individuals of the species would be affected but the overall population would not be affected. NPS staff members have issued citations and verbal warnings for dogs accessing Rodeo Lagoon; even one animal stepping into goby habitat could possibly crush the eggs, resulting in a take under the ESA. Although dogs are currently accessing the lagoon, there

is no published documentation that dogs have either directly or indirectly affected the goby in Rodeo Lagoon.

Therefore, to encompass possible effects, alternative A impacts on the tidewater goby and its critical habitat would be long term and would range from negligible to moderate and adverse. Generally, impacts would be localized along the western edge of the lagoon. Dogs could gain access to the lagoon and could crush goby burrows or goby eggs; the reproductive success of individuals of the species in a small, localized area (Rodeo Lagoon) could be affected and essential features of designated critical habitat may be impacted. Impacts would be localized but could constitute a permanent loss if tidewater goby individuals or eggs are crushed as a result of disturbance by dogs.

Under alternative A, no permit system exists for commercial dog walking. At Rodeo Beach/South Rodeo Beach, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the tidewater goby.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the tidewater goby at or in the vicinity of this site.

The recovery plan for the tidewater goby calls for protection and enhancement of currently occupied habitat, including managing freshwater inflow, non-native species, channelization, water quality, and human impacts; developing strategies to prevent further loss of habitat; and conducting research and monitoring (USFWS 2005a). The loss and modification of habitat as well as degradation of water quality are among the principal threats to the tidewater goby as determined by the USFWS (2008a, 5922). The *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, the park stewardship programs, maintenance activities, and structural fire operations have the potential to affect the tidewater goby and its habitat. The *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (NPS 2009c) may beneficially affect the tidewater goby through slight habitat improvements and substantially reduced sediment and contaminant input into Rodeo Lagoon. Habitat restoration programs are restoring riparian and wetland vegetation along the shoreline. Implementation of best management practices for park maintenance operations and improved facilities for vehicle washing at the fire station at Rodeo Beach/South Rodeo Beach will also reduce sedimentation and improve water quality in the lagoon. The tidewater goby was identified at the Giacomini Ranch in areas proposed for tidal wetland restoration. The NPS and the California State Lands Commission formulated the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). Therefore, this project could increase habitat for the tidewater goby in the Tomales Bay watershed ecosystem.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Rodeo Beach/South Rodeo Beach is uncommon. However, the interim compendium amendment would have a slight beneficial effect on tidewater goby and its critical habitat by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from direct harm to goby burrows and eggs, direct impact to the critical habitat through physical damage and nutrient addition from dog waste.

The negligible to long-term moderate adverse impacts on the tidewater goby from dogs at Rodeo Beach/ South Rodeo Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat enhancement and protection projects and the

interim permitting program should reduce some of the adverse impacts on the tidewater goby from alternative A. Therefore, the cumulative impacts on the tidewater goby under this alternative would be expected to range from negligible to long term, minor, and adverse.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE A CONCLUSION TABLE

Tidewater Goby and Critical Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term moderate adverse impacts	Dogs gain access to closed lagoon and could crush goby burrows or cause increased turbidity by trampling shoreline areas and re-suspending sediment; impacts would be localized along the western edge of the lagoon; a range of impacts is presented to encompass possible effects	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. In the vicinity of Rodeo Lagoon, alternative B would allow on-leash dog walking on Rodeo Beach, South Rodeo Beach, and on the footbridge and access trail to the beach. Rodeo Lagoon and Rodeo Lake would remain closed to dogs. Although the goby currently persists at the site under current conditions, limiting dog walking to on leash would avoid impacts on the existing population at Rodeo Lagoon. Additionally, a concurrent NPS project includes the installation of a post-and-cable fence along the beach side of Rodeo Lagoon to discourage visitors from accessing the lagoon, though it would not physically exclude dogs from this area. As stated above, tidewater gobies are resident fish with an isolated gene pool that complete their entire life cycle in Rodeo Lagoon. If dogs are physically restrained on leash at this site and deterred by fencing, they should not gain access to the lagoon or its shorelines. Assuming compliance with proposed regulations, alternative B would result in negligible impacts on the tidewater goby and its critical habitat; no measurable or perceptible changes to individual gobies, the population, or designated critical habitat would occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on the tidewater goby.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the tidewater goby at or in the vicinity of this site.

The recovery plan for the tidewater goby calls for protection and enhancement of currently occupied habitat, including managing freshwater inflow, non-native species, channelization, water quality, and human impacts; developing strategies to prevent further loss of habitat; and conducting research and monitoring (USFWS 2005a). The loss and modification of habitat as well as degradation of water quality are among the principal threats to the tidewater goby as determined by the USFWS (2008a, 5922). The *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, the park stewardship programs, maintenance activities, and structural fire operations have the potential to affect the tidewater goby and its habitat. The *Marin Headlands/Fort Baker Improvement and Transportation*

Management Plan/EIS (NPS 2009c) may beneficially affect the tidewater goby through slight habitat improvements and substantially reduced sediment and contaminant input into Rodeo Lagoon. Habitat restoration programs are restoring riparian and wetland vegetation along the shoreline. Implementation of best management practices for park maintenance operations and improved facilities for vehicle washing at the fire station at Rodeo Beach/South Rodeo Beach will also reduce sedimentation and improve water quality in the lagoon. The tidewater goby was identified at the Giacomini Ranch in areas proposed for tidal wetland restoration. The NPS and the California State Lands Commission formulated the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007). Therefore, this project could increase habitat for the tidewater goby in the Tomales Bay watershed ecosystem.

The negligible impacts on the tidewater goby from dogs at Rodeo Beach/South Rodeo Beach under alternative B were considered together with the beneficial effects of the projects mentioned above. The beneficial effects from the habitat enhancement and protection projects combined with the negligible impacts from alternative B would result in beneficial cumulative impacts.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE B CONCLUSION TABLE

Tidewater Goby and Critical Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Rodeo Lagoon would continue to be closed to dogs; physically restraining dogs on leash would prevent dog access to Rodeo Lagoon	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. In the vicinity of Rodeo Lagoon, alternative C would allow on-leash dog walking on the wooden footbridge over the lagoon. Rodeo Lagoon and Rodeo Lake are currently closed to dogs. Dogs would be allowed under voice and sight control in a VSCA on Rodeo Beach, and a post-and-cable fence is proposed as part of a concurrent project. This fence along the beach side of Rodeo Lagoon would discourage visitors from accessing the lagoon, but would not physically exclude dogs or visitors from this area. The VSCA would include portions of the sparsely vegetated foredunes that extend from the crest of the beach east to the lagoon and south to the ridge on the beach north of South Rodeo Beach. This alternative would not require dog walkers to physically restrain their dogs on leash on Rodeo Beach, which is located immediately adjacent to the gobies and their federally designated critical habitat. Assuming compliance with proposed regulations, alternative C would result in negligible impacts on the tidewater goby and its critical habitat; no measurable or perceptible changes to individual gobies, the population, or designated critical habitat would occur.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may have up to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on the tidewater goby from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the tidewater goby.

Cumulative Impacts. The negligible impacts on the tidewater goby from dogs at Rodeo Beach/South Rodeo Beach under alternative C were considered together with the beneficial effects of the projects mentioned above under alternative B. The beneficial effects from the habitat enhancement and protection projects combined with the negligible impacts from alternative C would result in beneficial cumulative impacts.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE C CONCLUSION TABLE

Tidewater Goby and Critical Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Rodeo Lagoon would continue to be closed to dogs; physically restraining dogs on leash would prevent dog access to Rodeo Lagoon; compliant dogs in the VSCA would not affect the goby; the proposed fence would also deter dogs from gaining access to the lagoon	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. In the vicinity of Rodeo Lagoon, under alternative D on-leash dog walking would be allowed on Rodeo Beach north of the footbridge to the lagoon and on the footbridge. Impacts would be the same as those for alternative B, assuming compliance: negligible.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on the tidewater goby.

Cumulative Impacts. The negligible impacts on the tidewater goby from dogs at Rodeo Beach/South Rodeo Beach under alternative D were considered together with the beneficial effects of the projects mentioned above under alternative B. The beneficial effects from the habitat enhancement and protection projects combined with the negligible impacts from alternative D would result in beneficial cumulative impacts.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE D CONCLUSION TABLE

Tidewater Goby and Critical Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Rodeo Lagoon would continue to be closed to dogs; physically restraining dogs on leash would prevent dog access to the lagoon	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. This alternative would establish VSCAs on both Rodeo Beach and South Rodeo Beach; on-leash dog walking would be allowed on the footbridge and trail that access the beach. Rodeo Lagoon would remain closed to dogs and people, and the proposed fence along the beach side of Rodeo Lagoon would discourage visitors from accessing the lagoon but would not physically exclude dogs from this area. Although this alternative includes a VSCA, with the addition of the fence as a deterrent, compliance with regulations in this alternative would result in protection of individual gobies and critical habitat. Therefore, assuming compliance, alternative

E would result in negligible impacts on the tidewater goby and its critical habitat; no measurable or perceptible changes to individual gobies, the population, or designated critical habitat would occur.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may have up to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on the tidewater goby from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the tidewater goby.

Cumulative Impacts. The negligible impacts on the tidewater goby from dogs at Rodeo Beach/South Rodeo Beach under alternative E were considered together with the beneficial effects of the projects mentioned above under alternative B. The beneficial effects from the habitat enhancement and protection projects combined with the negligible impacts from alternative E would result in beneficial cumulative impacts.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE E CONCLUSION TABLE

Tidewater Goby and Critical Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Rodeo Lagoon would continued to be closed to dogs; physically restraining dogs on leash would prevent dog access to Rodeo Lagoon; compliant dogs in the VSCA would not affect the goby; the proposed fence would deter dogs from gaining access to the lagoon	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the wooden footbridge over the lagoon. Rodeo Lagoon and Rodeo Lake would remain closed to dogs and people. Dogs would be allowed under voice and sight control in a VSCA on Rodeo Beach south to the sea stacks that divide the main beach from South Rodeo Beach, and a post-and-cable fence along the west end of the lagoon is proposed as part of a concurrent project. This fence would discourage visitors from accessing the lagoon, but would not physically exclude dogs or visitors from this area. The VSCA would include portions of the sparsely vegetated foredunes that extend from the crest of the beach east to the lagoon and south to the ridge on the beach just north of South Rodeo Beach. This alternative would not require dog walkers to physically restrain their dogs on leash on Rodeo Beach, which is located immediately adjacent to the gobies and their federally designated critical habitat. Assuming compliance with proposed regulations, the preferred alternative would result in negligible impacts on the tidewater goby and its critical habitat; no measurable or perceptible changes to individual gobies, the population, or designated critical habitat would occur.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may have up to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo

Beach. Impacts on the tidewater goby from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/ South Rodeo Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the tidewater goby.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the tidewater goby at or in the vicinity of this site.

The recovery plan for the tidewater goby calls for protection and enhancement of currently occupied habitat, including managing freshwater inflow, non-native species, channelization, water quality, and human impacts; developing strategies to prevent further loss of habitat; and conducting research and monitoring (USFWS 2005a). The loss and modification of habitat as well as degradation of water quality are among the principal threats to the tidewater goby as determined by the USFWS (2008a, 5922). The *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, the park stewardship programs, maintenance activities, and structural fire operations have the potential to affect the tidewater goby and its habitat. The *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* may beneficially affect the tidewater goby through slight habitat improvements and substantially reduced sediment and contaminant input into Rodeo Lagoon. Habitat restoration programs are restoring riparian and wetland vegetation along the shoreline. Implementation of best management practices for park maintenance operations and improved facilities for vehicle washing at the fire station at Rodeo Beach will also reduce sedimentation and improve water quality in the lagoon. The tidewater goby was identified at the Giacomini Ranch in areas proposed for tidal wetland restoration. The *Giacomini Wetland Restoration Project* (near Tomales Bay), which is restoring wetlands at the Giacomini Ranch, could increase habitat for the tidewater goby in the Tomales Bay watershed ecosystem.

The negligible impacts on the tidewater goby from dogs at Rodeo Beach/South Rodeo Beach under the preferred alternative were considered together with the beneficial effects of the projects mentioned above. The beneficial effects from the habitat enhancement and protection projects combined with the negligible impacts from the preferred alternative would result in beneficial cumulative impacts.

RODEO BEACH/SOUTH RODEO BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Tidewater Goby and Critical Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Rodeo Lagoon would continue to be closed to dogs; physically restraining dogs on leash would prevent dog access to Rodeo Lagoon; compliant dogs in the VSCA would not affect the goby; the proposed fence would deter dogs from gaining access to the lagoon	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

IMPACTS TO THE COHO SALMON (FEDERALLY AND STATE ENDANGERED) AND STEELHEAD TROUT (FEDERALLY THREATENED) BY SITE AND ALTERNATIVE

The central California coast coho salmon evolutionarily significant unit is listed as federally endangered as well as state endangered. In GGNRA, a genetically distinct run of coho salmon is found in the Marin Headlands, specifically in Redwood Creek at Muir Beach. Designated critical habitat for coho includes the majority of accessible estuarine and stream areas in the coastal watersheds of Marin County, including Redwood Creek in GGNRA.

The central California coast steelhead trout distinct population segment is listed as federally threatened. In the study area, this species occurs in Stinson Beach (Easkoot Creek), Muir Beach (Redwood Creek), Rodeo Beach (Rodeo Lagoon), and the Marin Headlands Trails (Rodeo Creek and Gerbode Creek) and potentially at Rancho Corral de Tierra (Martini Creek, Denniston Creek, and San Vincente Creek). Designated critical habitat for central California coast steelhead trout is mapped in Denniston Creek downstream of Denniston Reservoir, which is mostly off GGNRA property at Rancho Corral de Tierra. Designated critical habitat also includes most of the coastal streams of Marin County, including Redwood Creek in GGNRA (NOAA 2005, 76).

Designated critical habitat for central California coast steelhead trout includes most of the coastal streams of Marin County, including Redwood Creek in GGNRA (NOAA 2005, 76). At the Rodeo Beach site, it is likely that the steelhead trout is only found in Rodeo Lagoon for very limited periods and only during migration due to existing poor water quality at the lagoon. Because of the limited use of Rodeo Lagoon by the steelhead trout, all impacts on the steelhead trout at this site would be considered negligible; therefore, impacts on the steelhead in Rodeo Lagoon at Rodeo Beach are not discussed further in this section. Similarly, the steelhead trout has infrequent access to Easkoot Creek at the Stinson Beach site. However, Easkoot Creek is densely vegetated with riparian plant species and generally difficult for leashed dogs to access. Because of the difficulty of access to Easkoot Creek, all impacts on the steelhead trout at this site would be considered negligible; therefore, impacts on the steelhead in Easkoot Creek at Stinson Beach are not discussed further in this section. The following sections analyze impacts to steelhead trout at Muir Beach (Redwood Creek) and the Marin Headlands Trails (Rodeo Creek and Gerbode Creek).

Muir Beach (Coho Salmon and Steelhead Trout, Redwood Creek)

Alternative A: No Action. In the vicinity of Muir Beach, the Muir Beach Trail, Kaashi Way from the beach to the Coastal Trail, and the parking area are currently open to dogs on-leash, and the beach is open to dogs under voice control. The park has closed the lagoon and Redwood Creek, although it has been observed that these closures have been violated and dogs have accessed Redwood Creek. A total of 42 dog-related violations were reported from 2008 through 2016 (tables 15a and 15b). The most common violation was for having dogs off-leash (19 violations over 9 years) (tables 15a and 15b). The fence along the beach side of lower Redwood Creek and the lagoon discourages visitors from accessing the water, but does not physically exclude dogs or visitors from this area. The Muir Beach Community is located adjacent to this area, which results in high visitation on the weekends at Muir Beach. Park staff has observed that some local residents' dogs run free and leave dog waste without proper disposal at Muir Beach. The voice control area of Muir Beach encompasses the entrance channel of Redwood Creek and is located immediately adjacent to the shoreline of the lagoon, which has recently been restored. There is no physical barrier to prevent dogs from accessing portions of Redwood Creek that support coho salmon. Coho salmon and steelhead trout both use Redwood Creek throughout their life cycle, from migrating and laying eggs as adults to living in the stream as juveniles (NPS 2008c). Salmonids in general are sensitive to water quality issues; coho salmon are heavily dependent on stream flow and very sensitive to water temperature (NPS 2008c). Because these salmonids complete sensitive portions of their life cycle in

Redwood Creek, adult and juvenile life history stages could be affected by dogs that gain access to the creek. Eggs would not be affected, because salmonids require gravel areas of substrate for laying eggs; these areas are located farther upstream from the area where dogs can access Redwood Creek. Dogs along the shoreline of Redwood Creek could alter the normal behavior of coho salmon and steelhead trout directly if they frequently access the creek or its shoreline, or indirectly by causing increased turbidity by trampling shoreline areas and re-suspending sediment so that feeding is impaired. Potential impacts would be localized to the small area where dogs can access Redwood Creek. There is no documentation that dogs have either directly or indirectly affected either coho salmon or steelhead trout in Redwood Creek. Although these salmonids persist at the site under current conditions, a recent salmon decline has been observed in Redwood Creek. While a portion of this decline can be attributed to regional oceanic phenomena, local conditions that have not yet been determined may also have been a factor (NPS 2008c).

Therefore, alternative A impacts on the coho salmon and steelhead trout as well as associated critical habitat would be long term and would range from negligible to minor and adverse. A few individuals of the species in a small, localized area (Redwood Creek) could be occasionally affected by disturbance from dogs but essential features of critical habitat would not be impacted.

Under alternative A, no permit system exists for commercial dog walking. At Muir Beach, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the salmonids.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on coho salmon and steelhead trout at or in the vicinity of this site.

The park monitors coho salmon and steelhead trout annually in Redwood Creek and is conducting habitat restoration and protection activities, particularly in Redwood Creek. There were no spawning coho salmon observed during the 2007–2008 winter monitoring period, although a small number of coho fry were observed the next spring. While a portion of this decline can be attributed to regional oceanic phenomena, local conditions that have not yet been identified may also have been a factor (NPS 2008c, 2). The degradation of spawning (gravel) habitat, habitat alteration, and water diversions are among the primary threats to steelhead trout. Numerous creek and wetland restoration projects currently underway or proposed, the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, park stewardship programs, implementation of the GGNRA *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect coho salmon and steelhead trout as well as associated critical habitat.

Overall, many of the projects that have been completed, or are currently being implemented, or are planned for future implementation or are long term in GGNRA will benefit coho salmon and steelhead trout. Examples of projects and plans that will provide some benefit to these salmonids and critical habitat are described in this paragraph. The *Coho and Steelhead Restoration Project* has been initiated by the NPS, and focuses on Pine Gulch, Redwood, Olema, and Lagunitas creeks and their watersheds. This project includes assessing current coho salmon and steelhead trout abundance and distribution and developing and implementing a plan for restoring and monitoring the fish and their habitat. The *Muir Beach Wetland and Creek Restoration Project* aimed to restore a functional, self-sustaining ecosystem at the lagoon and included wetland, riparian, and aquatic components to re-create habitat for sustainable populations of special-status species, including habitat for federally and state-listed endangered coho salmon and federally threatened steelhead trout. The *Lower Redwood Creek Interim Flood Reduction Measures and Floodplain/Channel Restoration* project helped to reduce flooding on Pacific Way in Muir

Beach, maintained passage for federally threatened fish in Redwood Creek, and restored habitat and the floodplain at the GGNRA Banducci site. Specifically, this project reconnected Redwood Creek to its floodplain, expanded riparian vegetation, increased in-channel habitat complexity, and reestablished geomorphic processes, thus improving habitat for coho salmon and steelhead trout. The *Redwood Creek Watershed: Vision for the Future* project included efforts by public agencies in the watershed, who worked with the public and the vision team to identify issues and values in the watershed and define desired future conditions for watershed resources to create a Redwood Creek watershed that exists as an intact natural ecosystem and offers opportunities to learn, experience, and protect nature, rural character, and cultural history in an urbanized area.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Muir Beach is uncommon. However, the interim compendium amendment would have a slight beneficial effect on coho and steelhead salmon and Redwood Creek, which is critical habitat for these salmonids. The permits would limit the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, which could alter behavior of the salmonids and increase turbidity in the water. Additionally, dog waste could alter water quality to which the salmonids are sensitive.

The negligible to long-term minor adverse impacts on coho salmon and steelhead trout from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration projects and the interim permitting program should reduce some of the adverse impacts on coho salmon and steelhead trout from alternative A. Therefore, cumulative impacts on coho salmon under this alternative would be expected to be negligible.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Coho Salmon, Steelhead Trout and Critical Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Lagoon and Redwood Creek closures have been violated; adult and juvenile life stages could be affected by dogs gaining access to the creek and indirectly causing increased turbidity by trampling shoreline areas and re-suspending sediment	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. In the vicinity of Muir Beach, alternative B would require on-leash dog walking in the parking area, the Muir Beach Trail including the pedestrian bridge, the portion of Kaashi Way from the bridge to the beach, and on the beach. The lagoon and Redwood Creek would remain closed to dogs. The fence along the beach side of lower Redwood Creek and lagoon discourages visitors from accessing the water, but does not physically exclude dogs or visitors from this area. As stated above, coho salmon and steelhead trout complete sensitive portions of their life cycle in Redwood Creek. If dogs are physically restrained on leash at this site and deterred by fencing, they should not gain access to the creek or its shorelines and should not affect the salmonids during juvenile and adult life stages. Therefore, assuming compliance, alternative B would result in negligible impacts on the coho salmon and steelhead trout as well as associated critical habitat; no measurable or perceptible changes to individual salmonids, the population, or designated critical habitat would occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on the salmonids.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on coho salmon and steelhead trout at or in the vicinity of this site.

The park monitors coho salmon and steelhead trout annually in Redwood Creek and is conducting habitat restoration and protection activities, particularly in Redwood Creek. There were no spawning coho salmon observed during the 2007–2008 winter monitoring period, although a small number of coho fry were observed the next spring. While a portion of this decline can be attributed to regional oceanic phenomena, local conditions that have not yet been identified may also have been a factor (NPS 2008c, 2). The degradation of spawning (gravel) habitat, habitat alteration, and water diversions are among the primary threats to steelhead trout. Numerous creek and wetland restoration projects currently underway or proposed, the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, park stewardship programs, implementation of the GGNRA *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect coho salmon and steelhead trout as well as associated critical habitat.

Overall, many of the projects that have been completed, or are currently being implemented, or are planned for future implementation or are long term in GGNRA will benefit coho salmon and steelhead trout. Examples of projects and plans that will provide some benefit to these salmonids and critical habitat are described in this paragraph. The *Coho and Steelhead Restoration Project* has been initiated by the NPS, and focuses on Pine Gulch, Redwood, Olema, and Lagunitas creeks and their watersheds. This project includes assessing current coho salmon and steelhead trout abundance and distribution and developing and implementing a plan for restoring and monitoring the fish and their habitat. The *Muir Beach Wetland and Creek Restoration Project* aimed to restore a functional, self-sustaining ecosystem at the lagoon and included wetland, riparian, and aquatic components to re-create habitat for sustainable populations of special-status species, including habitat for federally and state-listed endangered coho salmon and federally threatened steelhead trout. The *Lower Redwood Creek Interim Flood Reduction Measures and Floodplain/Channel Restoration* project helped to reduce flooding on Pacific Way in Muir Beach, maintained passage for federally threatened fish in Redwood Creek, and restored habitat and the floodplain at the GGNRA Banducci site. Specifically, this project reconnected Redwood Creek to its floodplain, expanded riparian vegetation, increased in-channel habitat complexity, and reestablished geomorphic processes, thus improving habitat for coho salmon and steelhead trout. The *Redwood Creek Watershed: Vision for the Future* project included efforts by public agencies in the watershed, who worked with the public and the vision team to identify issues and values in the watershed and define desired future conditions for watershed resources to create a Redwood Creek watershed that exists as an intact natural ecosystem and offers opportunities to learn, experience, and protect nature, rural character, and cultural history in an urbanized area.

The negligible impacts on coho salmon and steelhead trout from dogs at Muir Beach under alternative B were considered together with the beneficial effects of the projects mentioned above. The beneficial effects from the habitat restoration projects combined with the negligible impacts from alternative B would result in beneficial cumulative impacts on the salmonids.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Coho Salmon, Steelhead Trout, and Critical Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The lagoon and Redwood Creek would continue to be closed to dogs; physically restraining dogs on leash would prevent dog access to the creek and its shorelines	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the sites where permits would be issued allowing individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coho salmon and steelhead trout.

Cumulative Impacts. Under alternative C, the cumulative impacts on the salmonids at this park site would be the same as those under alternative B: beneficial.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Coho Salmon, Steelhead Trout, and Critical Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The lagoon and Redwood Creek would continue to be closed to dogs; physically restraining dogs on leash would prevent dog access to the creek or its shorelines	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. In the vicinity of Muir Beach, alternative D would allow on-leash dog walking in the parking area and on the Muir Beach Trail adjacent to the parking lot. The beach and the pedestrian bridge to the beach would be closed to dogs. The lagoon and Redwood Creek are currently closed to dogs. The fence along the beach side of lower Redwood Creek and lagoon discourages visitors from accessing the water, but does not physically exclude dogs or visitors from this area. This alternative would provide maximum protection of Redwood Creek for coho salmon and steelhead trout. If dogs are physically restrained on leash at this site and deterred by fencing, they should not gain access to the creek or its shorelines and should not affect the salmonids during juvenile and adult life stages. Therefore, assuming compliance, alternative D would result in negligible impacts on the coho salmon and steelhead trout as well as associated critical habitat; no measurable or perceptible changes to individual salmonids, the population, or designated critical habitat would occur.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on the salmonids.

Cumulative Impacts. The negligible impacts on coho salmon and steelhead trout from dogs at Muir Beach under alternative D were considered together with the beneficial effects of the projects mentioned above under alternative B. The beneficial effects from the habitat restoration projects combined with the negligible impacts from alternative D would result in beneficial cumulative impacts on the salmonids.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Coho Salmon, Steelhead Trout, and Critical Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The lagoon and Redwood Creek would continue to be closed to dogs; physically restraining dogs on leash would prevent dog access to the creek and its shorelines	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. At Muir Beach, on-leash dog walking would be allowed on the Muir Beach Trail, the pedestrian bridge, and the portion of Kaashi Way from the bridge to the beach, and the parking lot. The portion of Muir Beach south of Kaashi Way would be a designated VSCA open to dogs under voice and sight control. Although a VSCA has been designated under this alternative, it would not be sited near Redwood Creek, as dogs would be prohibited on the remainder of the beach north of Kaashi Way. The lagoon and Redwood Creek area are currently closed to dogs. The fence along the beach side of lower Redwood Creek and lagoon discourages visitors from accessing the water, but does not physically exclude dogs or visitors from this area. If dogs are physically restrained on leash at this site and deterred by a fence, they should not gain access to the creek or its shorelines and should not affect the salmonids during juvenile and adult life stages. Therefore, assuming compliance, alternative E would result in negligible impacts on the coho salmon and steelhead trout as well as associated its critical habitat; no measurable or perceptible changes to individual salmonids, the population, or designated critical habitat would occur.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the sites where permits would be issued allowing individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the salmonids.

Cumulative Impacts. The negligible impacts on coho salmon and steelhead trout from dogs at Muir Beach under alternative E were considered together with the beneficial effects of the projects mentioned above under alternative B. The beneficial effects from the habitat restoration projects combined with the negligible impacts from alternative E would result in beneficial cumulative impacts on the salmonids.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Coho Salmon, Steelhead Trout, and Critical Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The lagoon and Redwood Creek would continue to be closed to dogs; physically restraining dogs on leash would prevent access to the creek and its shorelines; the VSCA would not be sited near Redwood Creek	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the beach, the parking area, the Muir Beach Trail including the pedestrian bridge, and Kaashi Way from the beach to Pacific Way. The lagoon and Redwood Creek would remain closed to dogs. The fence along the beach side of lower Redwood Creek and lagoon discourages visitors from accessing the water, but does not physically exclude dogs or visitors from this area. This alternative would provide protection of Redwood Creek and the coho salmon as well as steelhead trout. If dogs are physically restrained on leash at this site and deterred by fencing, they should not gain access to the creek or its shorelines and should not affect the salmonids during juvenile and adult life stages. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on the coho salmon and steelhead trout as well as associated critical habitat; no measurable or perceptible changes to individual salmonids, the population, or designated critical habitat would occur.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the salmonids.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on coho salmon and steelhead trout at or in the vicinity of this site.

The park monitors coho salmon and steelhead trout annually in Redwood Creek and is conducting habitat restoration and protection activities, particularly in Redwood Creek. There were no spawning coho salmon observed during the 2007–2008 winter monitoring period, although a small number of coho fry were observed the next spring. While a portion of this decline can be attributed to regional oceanic phenomena, local conditions that have not yet been identified may also have been a factor (NPS 2008c, 2). The degradation of spawning (gravel) habitat, habitat alteration, and water diversions are among the primary threats to steelhead trout. Numerous creek and wetland restoration projects currently underway or proposed, the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, park stewardship programs, implementation of the GGNRA *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect coho salmon and steelhead trout as well as associated critical habitat.

Overall, many of the projects that have been completed, are currently being implemented, or are planned for future implementation or that are long term in GGNRA will benefit coho salmon. Examples of projects and plans that will provide some benefit to coho salmon and steelhead trout as well as associated critical habitat are described in this paragraph. The *Coho and Steelhead Restoration Project* has been initiated by the NPS, and focuses on Pine Gulch, Redwood, Olema, and Lagunitas creeks and their watersheds. This project includes assessing current coho salmon and steelhead trout abundance and distribution and developing and implementing a plan for restoring and monitoring the fish and their habitat. The *Muir Beach Wetland and Creek Restoration Project* aimed to restore a functional, self-sustaining ecosystem at the lagoon and included wetland, riparian and aquatic components to re-create habitat for sustainable populations of special-status species, including habitat for federally and state-listed endangered coho salmon and federally threatened steelhead trout. The *Lower Redwood Creek Interim Flood Reduction Measures and Floodplain/Channel Restoration* project helped to reduce flooding on Pacific Way in Muir Beach, maintained passage for federally threatened fish in Redwood Creek, and restored habitat and the floodplain at the GGNRA Banducci site. Specifically, this project reconnected Redwood Creek to its floodplain, expanded riparian vegetation, increased in-channel habitat complexity, and reestablished geomorphic processes, thus improving habitat for coho salmon and steelhead trout. The *Redwood Creek Watershed: Vision for the Future* project included efforts by public agencies in the watershed, who worked with the public and the vision team to identify issues and values in the watershed and define desired future conditions for watershed resources to create a Redwood Creek watershed that exists as an intact natural ecosystem and offers opportunities to learn, experience, and protect nature, rural character, and cultural history in an urbanized area.

The negligible impacts on coho salmon and steelhead trout from dogs at Muir Beach under the preferred alternative were considered together with the beneficial effects of the projects mentioned above. The beneficial effects from the habitat restoration projects combined with the negligible impacts from the preferred alternative would result in beneficial cumulative impacts on the salmonids under this alternative.

MUIR BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Coho Salmon, Steelhead Trout, and Critical Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The lagoon and Redwood Creek would continue to be closed to dogs; physically restraining dogs on leash would prevent dog access to the creek and its shorelines	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Marin Headlands Trails (Steelhead Trout, Rodeo Creek and Gerbode Creek)

Alternative A: No Action. Currently, Tennessee Valley is closed to dogs with the exception of the section of the Coastal Trail that crosses Tennessee Valley and the North Miwok Trail from the junction with the Tennessee Valley Trail, where dogs are allowed on leash. This site has documented low to high visitor use, including low to moderate use by dog walkers. Dog-related incidents are high at this site with a total of 269 from 2008 through 2011, with the majority of incidents for having dogs within closed areas (195 incidents), and an additional 232 incidents reported from 2012 through 2016 (tables 17a and 17b). A total of 31 and 98 off-leash violations were reported at the site for the two time periods, respectively (tables 17a and 17b). Similar to coho salmon, steelhead trout use Rodeo Creek and Gerbode Creek (both of which flow into Rodeo Lake) during their life cycle, from migrating as adults to living in the stream or lagoon as juveniles (NPS 2008c, 1). Eggs would not be affected, because salmonids require gravel areas

of substrate for laying eggs. Dogs could alter the normal behavior of steelhead trout directly if they frequently access the creek or shorelines, or indirectly by causing increased turbidity by trampling shoreline areas and re-suspending sediment so that feeding is impaired. However, potential impacts would be localized to the area where dogs can access these creeks. There is no documentation that dogs have either directly or indirectly affected the trout in either Rodeo Creek or Gerbode Creek. Therefore, alternative A impacts on the steelhead trout would range from negligible to long term, minor, and adverse. A few individuals of the species in a small, localized area (Rodeo Creek and Gerbode Creek) could occasionally be affected by disturbance from dogs but essential features of critical habitat would not be impacted.

Under alternative A, no permit system exists for commercial dog walking. At the Marin Headlands Trails, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the steelhead trout.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on steelhead trout at or in the vicinity of this site.

In general, the park monitors steelhead trout (although not in the Marin Headlands) and is conducting habitat restoration and protection activities. The degradation of spawning (gravel) habitat, habitat alteration, and water diversions are among the primary threats to steelhead trout. Numerous creek and wetland restoration projects currently underway or proposed, the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, the park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect steelhead trout. Overall, many of the projects that have been completed, are currently being implemented, or are planned for future implementation will benefit steelhead trout.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Marin Headlands Trails is uncommon. However, the interim compendium amendment would have a slight beneficial effect on steelhead salmon and Rodeo and Gerbode Creeks, habitat for this salmon species. The permits would limit the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, which could alter behavior of the salmonids and increase turbidity in the water. Additionally, dog waste could alter water quality to which the steelhead salmon is sensitive.

The negligible to long-term minor adverse impacts on steelhead trout from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection activities and the interim permitting program should reduce some of the adverse impacts on steelhead trout from alternative A. Therefore, the cumulative impacts on the steelhead trout under this alternative would be expected to be negligible.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Steelhead Trout Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	In Rodeo Creek and Gerbode Creek, adults and juveniles could be affected by dogs gaining access to the creek and causing increased turbidity by trampling shoreline areas and re-suspending sediment	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs at the Marin Headlands site and Rodeo Lake as well as Rodeo Creek and Gerbode Creek would be closed to dogs. This alternative would be most protective of the steelhead trout and the creeks would maintain the integrity of the entire Marin Headlands Trails site. Assuming compliance, alternative B would result in no impact on the steelhead trout.

Since dogs would not be allowed at the Marin Headlands Trails, there would be no impact from commercial dog walkers on the steelhead trout.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on steelhead trout at or in the vicinity of this site.

In general, the park monitors steelhead trout (although not in the Marin Headlands) and is conducting habitat restoration and protection activities. The degradation of spawning (gravel) habitat, habitat alteration, and water diversions are among the primary threats to steelhead trout. Numerous creek and wetland restoration projects currently underway or proposed, the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, the park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect steelhead trout. Overall, many of the projects that have been completed, are currently being implemented, or are planned for future implementation will benefit steelhead trout.

The lack of impacts on steelhead trout from dogs at the Marin Headlands Trails under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection activities combined with the lack of impacts from alternative B would result in beneficial cumulative impacts.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Steelhead Trout Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor. This corridor would extend from the Rodeo

Beach parking lot to the intersection of Bunker and McCullough Roads via the North Lagoon Loop Trail, Miwok Trail, and Rodeo Valley Trail, including the connector trail from the Rodeo Valley Trail to Smith Road Trailhead. On-leash dog walking would also be allowed on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), and the Batteries Loop Trail. Dogs would be physically restrained on a leash and would be allowed on fewer trails altogether compared to alternative A. Assuming compliance with proposed regulations, alternative C would result in negligible impacts on the steelhead trout; no measurable or perceptible changes to individual trout, the population, or designated critical habitat would occur.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Marin Headlands Trails is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the steelhead trout.

Cumulative Impacts. The negligible impacts on steelhead trout from dogs at the Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the habitat restoration and protection activities combined with the negligible impacts from alternative C would result in beneficial cumulative impacts.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Steelhead Trout Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to the both Rodeo Creek and Gerbode Creek	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B (no dogs on site), and impacts would be the same, assuming compliance: no impact.

Since dogs would not be allowed at the Marin Headlands Trails, there would be no impact from commercial dog walkers on the steelhead trout.

Cumulative Impacts. The lack of impacts on steelhead trout from dogs at the Marin Headlands Trails under alternative D were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the habitat restoration and protection activities combined with the lack of impacts from alternative D would result in beneficial cumulative impacts.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Steelhead Trout Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Conzelman Coastal Trail from Highway 101 to the McCullough intersection and then to the Coastal Trail Bike Route, including Julian Road, to Rodeo Beach parking lot. On-leash dog walking would be available on the Old Bunker Fire Road Loop (which includes a section of the Coastal Trail), Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, Marin Drive, Rodeo Avenue Trail, and Morning Sun Trail. Impacts would be the same as those under alternative C, assuming compliance: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Marin Headlands Trails is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the steelhead trout.

Cumulative Impacts. The negligible impacts on steelhead trout from dogs at Marin Headlands Trails under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the habitat restoration and protection activities combined with the negligible impacts from alternative E would result in beneficial cumulative impacts.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Steelhead Trout Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to the both Rodeo Creek and Gerbode Creek	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, which extends from the Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via the North Lagoon Loop Trail, and the Miwok and Rodeo Valley trails, and includes the connector trail from Rodeo Valley Trail to the Smith Road trailhead. On-leash dog walking would be available on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), Batteries Loop Trail, Rodeo Avenue Trail, and Morning Sun Trail. Dogs would be physically restrained on a leash and would be allowed on fewer trails altogether compared to alternative A. Assuming compliance with proposed regulations, the preferred alternative would result in negligible impacts on the steelhead trout; no measurable or perceptible changes to individual trout, the population, or designated critical habitat would occur.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under the preferred alternative, permits would be issued to individual or commercial dog walkers to walk more than three dogs on a short segment of the North Lagoon Loop Trail. Allowing dog walkers with more than three dogs on the North Lagoon Loop Trail from the Rodeo Beach parking lot to the pedestrian bridge creates a loop with the permitted areas allowed under the preferred alternative for Rodeo Beach. Since commercial dog walking is not common at Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the steelhead trout.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on steelhead trout at or in the vicinity of this site.

The park monitors steelhead trout and is conducting habitat restoration and protection activities. The degradation of spawning (gravel) habitat, habitat alteration, and water diversions are among the primary threats to steelhead trout. Numerous creek and wetland restoration projects currently underway or proposed, the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect steelhead trout. Overall, many of the projects that have been completed, are currently being implemented, or are planned for future implementation will benefit steelhead trout.

The negligible impacts on steelhead trout from dogs at the Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration and protection activities combined with the negligible impacts from the preferred alternative would result in beneficial cumulative impacts.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE F CONCLUSION TABLE

Steelhead Trout Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to the both Rodeo Creek and Gerbode Creek	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Rancho Corral de Tierra (Steelhead Trout, Denniston and Martini Creeks)

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed at Rancho. Staff regularly working at Rancho characterize use by dog walkers as moderate overall with moderate to high use in the Montara area; compliance with the leash law is generally low. Because Rancho Corral de Tierra was just transferred to NPS in December 2011, law enforcement statistics are not available for this site. Rancho Corral de Tierra has low compliance with the leash law. At Rancho Corral de Tierra, steelhead trout potentially occur in Denniston Creek in the El Granada area and in Martini Creek in the Montara area; the current presence and distribution in these creeks is unclear. A historic occurrence of steelhead trout has been noted in San Vincente Creek at Rancho Corral de Tierra, but the population is believed to be extant, even though there are current physical blockages to fish entry along this creek (POST 2001, 14).

Martini Creek enters the Pacific Ocean at Montara State Beach near the Montara area of Rancho. A 1995 DFG memo indicates that Martini Creek is "…now inhabited by steelhead/resident rainbow trout" (DFG 1995 in Becker and Reining 2008, 14-15) but additional sources document that "The Highway 1 culvert, which has a four foot drop at both ends, represents an impassable barrier to any migratory fish. Additionally, an instream impoundment blocks the flow approximately 100 yards upstream from highway 1" (DFG ca 1994). One of the current trails at the site, Old San Pedro Mountain Road, includes a small bridge over Martini Creek. However, where Old San Pedro Mountain Road crosses Martini Creek via a bridge, there are steep, incised stream banks and dense vegetation that would likely preclude access by both humans and dogs, including off-leash dogs. Therefore, even if steelhead do still inhabit Martini Creek, the area is not accessible by humans and dogs.

Denniston Creek enters the Pacific Ocean at Half Moon Bay and a reservoir exists in Denniston Creek about 1 mile upstream from the ocean. Upstream of the reservoir, the majority of Denniston Creek is located within the El Granada area of Rancho. Critical habitat for steelhead trout is mapped in Denniston Creek downstream of Denniston Reservoir, which is mostly off GGNRA property. Upstream of the reservoir, according to a DFG memo, a ten foot high instream impoundment is a total barrier to fish passage (DFG ca 1994 in Becker and Reining 2008, 14-15) and fish above this barrier are not considered listed. The 1994 DFG memo also states that the final mile is usually dewatered in the summer due to agricultural diversions and withdrawal by the Coastside Water District (Becker and Reining 2008, 14-15). An undated DFG creek inventory summarizes conditions in Denniston Creek and states, "The creek and its tributaries provide a good potential habitat for steelhead trout if the barriers to migration were removed (Becker and Reining 2008, 14-15). During a 1992 survey, steelhead trout were observed "throughout the drainage" of Denniston Creek (DFG 1992a in Becker and Reining 2008, 14-15). A survey of Denniston Creek downstream from the dam in 2006 included observations of steelhead fry and individuals to about six inches in length (Becker and Reining 2008, 14-15). Dog walking currently occurs on the Denniston Ridge Trail, located approximately 850 ft from Denniston Creek, which is buffered by riparian vegetation and does not allow access by humans or dogs.

As noted above, Rancho Corral de Tierra has low compliance with the leash law, although educational efforts by staff, particularly by law enforcement staff, are ongoing. NPS staff have observed off-leash dogs running in areas with potentially sensitive habitat. Park staff observed a dog swimming in a waterbody at Rancho, but no observations of dogs accessing Denniston or Martini Creeks have been reported. Also, there is no documentation that dogs have either directly or indirectly affected steelhead trout at Rancho Corral de Tierra. The current presence and distribution of steelhead trout at Martini Creek is unclear, a potential barrier to fish exists, and access to this creek is difficult for both humans and dogs, including off-leash dogs that may be present at the site. Similarly there is a barrier to fish passage in the stream above Denniston Reservoir and along San Vicente Creek as well. Also, the Denniston Ridge Trail is located a distance from Denniston Creek and existing riparian vegetation would make access to the creek unlikely. Therefore, impacts on the steelhead trout at Rancho Corral de Tierra would be considered negligible under alternative A. Impacts would result in no measurable or perceptible changes in individuals of a species or its habitat (including critical habitat as designated under the ESA).

Under alternative A, no permit system exists for commercial dog walking. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the frog.

Cumulative Impacts. Projects and actions in and near Rancho Corral de Tierra were considered for the cumulative impacts analysis (appendix K). Since the Rancho Corral de Tierra site has been transferred to NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking. Additionally, the park currently has no site-specific plans for steelhead trout restoration in the vicinity of this site exist. The following is a discussion of projects that have had, are currently having, or have the potential to have effects on steelhead trout at or in the vicinity of this site.

In general, the park monitors steelhead trout (although not at Rancho) and is conducting habitat restoration and protection activities. The degradation of spawning (gravel) habitat, habitat alteration, and water diversions are among the primary threats to steelhead trout. Numerous creek and wetland restoration projects currently underway or proposed, the park stewardship programs, implementation of the Fire Management Plan (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect steelhead trout. Overall, many of the projects that have been completed, are currently being implemented, or are planned for future implementation will benefit steelhead trout. However, the majority of restoration projects mentioned

previously aimed to benefit steelhead trout are located in Marin County. In San Mateo County, the CalTrans Devil Slide project involved construction of two tunnels beneath San Pedro Mountain to take Highway 1 off of Devils Slide (County of San Mateo 2016d, 1). Because the tunnel alternative was chosen over the Martini Creek alternative, no impacts to steelhead trout occurred as a result of the CalTrans Devil Slide project (County of San Mateo 2016d). The effects from future construction projects, maintenance operations, and other agency projects on steelhead may be adverse, but these actions have not yet been identified, are currently unknown, and would likely require mitigation. Therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the steelhead trout from dogs at Rancho Corral de Tierra under alternative A were considered together with the effects of the projects mentioned above. The negligible cumulative effects from other actions combined with the negligible impacts on the steelhead trout from alternative A would result in negligible cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE A CONCLUSION TABLE

Steelhead Trout Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts	Although off-leash dogs have been observed at the site, both Martini and Denniston Creeks where steelhead occur are difficult to access by humans/dogs and have existing barriers to fish which currently block migration	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. On-leash dog walking would be allowed on designated trails in two areas open to dog walking near Montara and El Granada, which were identified by the local dog walking group as key areas for this use. All waterbodies, including Martini and Denniston Creeks, that potentially support steelhead trout would continue to be closed to humans and dogs. Physically restraining dogs on leash would also prevent dog access to the creek and its shorelines but both creeks are difficult to access by humans and dogs and have existing barriers to fish which currently block migration. Therefore, assuming compliance, alternative B would result in negligible impacts on steelhead trout as well as associated critical habitat; no measurable or perceptible changes to individuals, the population, or designated critical habitat would occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking at Rancho is not common, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on steelhead trout.

Cumulative Impacts. Projects and actions in and near Rancho Corral de Tierra were considered for the cumulative impacts analysis (appendix K). Since the Rancho Corral de Tierra site has been transferred to NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking. Additionally, the park currently has no site-specific plans for steelhead trout restoration in the vicinity of this site exist. The following is a discussion of projects that have had, are currently having, or have the potential to have effects on steelhead trout at or in the vicinity of this site.

In general, the park monitors steelhead trout (although not at Rancho) and is conducting habitat restoration and protection activities. The degradation of spawning (gravel) habitat, habitat alteration, and water diversions are among the primary threats to steelhead trout. Numerous creek and wetland restoration projects currently underway or proposed, the park stewardship programs, implementation of the Fire Management Plan (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect steelhead trout. Overall, many of the projects that have been completed, are currently being implemented, or are planned for future implementation will benefit steelhead trout. However, the majority of restoration projects mentioned previously aimed to benefit steelhead trout are located in Marin County. In San Mateo County, the CalTrans Devil Slide project involved construction of two tunnels beneath San Pedro Mountain to take Highway 1 off of Devils Slide (County of San Mateo 2016d, 1). Because the tunnel alternative was chosen over the Martini Creek alternative, no impacts to steelhead trout occurred as a result of the CalTrans Devil Slide project (County of San Mateo 2016d). The effects from future construction projects, maintenance operations, and other agency projects on steelhead may be adverse, but these actions have not yet been identified, are currently unknown, and would likely require mitigation. Therefore, these projects would have negligible cumulative impacts.

The negligible impacts on steelhead trout from dogs at Rancho Corral de Tierra under alternative B were considered together with the negligible effects of the projects mentioned above. The negligible effects from projects combined with the negligible impacts from alternative B would result in negligible cumulative impacts on steelhead trout under this alternative.

RANCHO CORRAL DE TIERRA ALTERNATIVE B CONCLUSION TABLE

Steelhead Trout Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Martini and Denniston Creeks would continue to be closed to humans and dogs; physically restraining dogs on leash would also prevent dog access to the creek and its shorelines but both creeks are difficult to access by humans/dogs	No change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed on some trails within two areas at Rancho Corral de Tierra in the Montara and El Granada areas. A VSCA is also proposed under alternative C in the Montara area between Le Conte Street and Tamarind Street, in an open grassy area near the Farallone View School. The proposed VSCA is not located near Martini Creek and all waterbodies, including Martini and Denniston Creeks, that potentially support steelhead trout would continue to be closed to humans and dogs. Physically restraining dogs on leash in all other areas would also prevent dog access to the creek and its shorelines but both creeks are difficult to access by humans and dogs and have existing barriers to fish which currently block migration. Therefore, assuming compliance, alternative C would result in negligible impacts on steelhead trout as well as associated critical habitat; no measurable or perceptible changes to individuals, the population, or designated critical habitat would occur.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking under this alternative would have negligible impacts steelhead trout.

Cumulative Impacts. Under alternative C, the cumulative impacts on steelhead trout at this park site would be the same as those under alternative B: negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE C CONCLUSION TABLE

Steelhead Trout Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Martini and Denniston Creeks would continue to be closed to humans and dogs; physically restraining dogs on leash would also prevent dog access to the creek and its shorelines but both creeks are difficult to access by humans/dogs; VSCA is not located near Martini Creek	No change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed in the Montara area on two trails: Old San Pedro Mountain Road and the Farallon Cutoff. Dogs would be prohibited in other areas of the site, including the entire El Granada area. Martini Creek in the Montara area, which potentially supports steelhead trout would continue to be closed to humans and dogs. Physically restraining dogs on leash along the two trails in the Montara area would also prevent dog access to the creek and its shorelines but the creeks is difficult to access by humans and dogs and has an existing barrier to fish which currently blocks migration. Therefore, assuming compliance, alternative D would result in negligible impacts on steelhead trout; no measurable or perceptible changes to individuals, the population, or designated critical habitat would occur.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on steelhead trout.

Cumulative Impacts. Under alternative D, the cumulative impacts on steelhead trout at this park site would be the same as those under alternative B: negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE D CONCLUSION TABLE

Steelhead Trout Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Martini and Denniston Creeks would continue to be closed to humans and dogs; physically restraining dogs on leash would also prevent dog access to the creek and its shorelines but both creeks are difficult to access by humans/dogs	No change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Currently, Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on steelhead trout.

Cumulative Impacts. Under alternative E, the cumulative impacts on steelhead trout at this park site would be the same as those under alternative B: negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE E CONCLUSION TABLE

Steelhead Trout Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Martini and Denniston Creeks would continue to be closed to humans and dogs; physically restraining dogs on leash would also prevent dog access to the creek and its shorelines but both creeks are difficult to access by humans/dogs; VSCA is not located near Martini Creek	No change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on designated trails in three areas. Trails in Montara include Old San Pedro Mountain Road, LeConte Trail, Corona Pedro Trail, and Farallon Cutoff from the park boundary in the west to the intersection with Corona Pedro Trail. On-leash trails in the El Granada area include the Denniston Ridge Trail between the San Carlos Trail and its intersection with the Clipper Ridge Trail, the Clipper Ridge Trail, the Memorial Loop, the Almeria Trail, and the San Carlos Trail. In the Moss Beach area, on-leash dog walking would be allowed on the Vincente Ridge and Ranchette Trails. At Rancho Corral de Tierra, steelhead trout potentially occur in Denniston Creek in the El Granada area and in Martini Creek in the Montara area; the current presence and distribution in these creeks is unclear. A historic occurrence of steelhead trout has also been noted in San Vincente Creek at Rancho Corral de Tierra, but the population is believed to be extant, even though there are current physical blockages to fish entry along this creek (POST 2001, 14). The preferred alternative would also establish a VSCA at Flat Top; however, the area is a former quarry site and would not impact a potential steelhead trout population.

In the Montara area, dog walking would be allowed along Old San Pedro Mountain Road, including a small bridge over Martini Creek. However, where Old San Pedro Mountain Road crosses Martini Creek via a bridge, there are steep, incised stream banks and dense vegetation that would likely preclude access by both humans and dogs. The current presence and distribution of steelhead trout at Martini Creek is unclear, a potential barrier to fish exists, and access to this creek is difficult for both humans and dogs. In the El Granada area of Rancho, on-leash dog walking would be allowed along Denniston Ridge Trail, located approximately 850 ft from Denniston Creek, which is buffered by riparian vegetation. Critical habitat is mapped in Denniston Creek downstream of Denniston Reservoir and off GGNRA property; upstream, according to a DFG memo, a ten foot high instream impoundment is a total barrier to fish passage (DFG ca 1994 in Becker and Reining 2008, 14-15) and fish above this barrier are not considered listed. As a result of the barrier to fish passage in the stream above the reservoir at Rancho, the distance from the Denniston Ridge Trail to the creek and existing riparian vegetation, it is unlikely that dogs would gain access to the creek and impact steelhead trout.

All waterbodies, including Martini and Denniston Creeks, that potentially support steelhead trout would continue to be closed to humans and dogs. Physically restraining dogs on leash would also prevent dog access to the creek and its shorelines but both creeks are difficult to access by humans and dogs and have existing barriers to fish which currently block migration. Therefore, impacts on the steelhead trout at both areas of Rancho Corral de Tierra would be considered negligible under the preferred alternative. Impacts would result in no measurable or perceptible changes in individuals of a species or its habitat (including critical habitat as designated under the ESA).

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the frog.

Cumulative Impacts. Projects and actions in and near Rancho Corral de Tierra were considered for the cumulative impacts analysis (appendix K). Since the Rancho Corral de Tierra site has been transferred to NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking. Additionally, the park currently has no site-specific plans for steelhead trout restoration at Rancho. The following is a discussion of projects that have had, are currently having, or have the potential to have effects on steelhead trout at or in the vicinity of this site.

In general, the park monitors steelhead trout (although not at Rancho) and is conducting habitat restoration and protection activities. The degradation of spawning (gravel) habitat, habitat alteration, and water diversions are among the primary threats to steelhead trout. Numerous creek and wetland restoration projects currently underway or proposed, the park stewardship programs, implementation of the Fire Management Plan (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect steelhead trout. Overall, many of the projects that have been completed, are currently being implemented, or are planned for future implementation will benefit steelhead trout. However, the majority of restoration projects mentioned previously aimed to benefit steelhead trout are located in Marin County. In San Mateo County, the CalTrans Devil Slide project involved construction of two tunnels beneath San Pedro Mountain to take Highway 1 off of Devils Slide (County of San Mateo 2016d, 1). Because the tunnel alternative was chosen over the Martini Creek alternative, no impacts to steelhead trout occurred as a result of the CalTrans Devil Slide project (County of San Mateo 2016d). The effects from future construction projects, maintenance operations, and other agency projects on steelhead trout may be adverse, but these actions have not yet been identified and are currently unknown and would likely require mitigation. Therefore, these projects would have negligible cumulative impacts.

The negligible impacts on the steelhead trout from dogs at Rancho Corral de Tierra under the preferred alternative were considered together with the effects of the projects mentioned above. The negligible cumulative effects from other actions combined with the negligible impacts on the steelhead trout from the preferred alternative would result in negligible cumulative impacts.

RANCHO CORRAL DE TIERRA PREFERRED ALTERNATIVE F CONCLUSION TABLE

Steelhead Trout Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Martini and Denniston Creeks would continue to be closed to humans and dogs; physically restraining dogs on leash would also prevent dog access to the creek and its shorelines but both creeks are difficult to access by humans/dogs	No change, assuming compliance	Negligible cumulative impacts

IMPACTS TO THE CALIFORNIA RED-LEGGED FROG (FEDERALLY THREATENED) BY SITE AND ALTERNATIVE

In the study area, this species occurs in Marin County at Muir Beach (water bodies at the site provide habitat but no known breeding occurs) and the Marin Headlands Trails (Rodeo Lake provides both nonbreeding and breeding habitat, Rodeo Lagoon provides nonbreeding habitat, and Tennessee Valley Pond provides nonbreeding and breeding habitat), as well as at Mori Point (the ponds provide nonbreeding and breeding habitat), Milagra Ridge (the ponds provide nonbreeding and breeding habitat), Sweeney Ridge/Cattle Hill, and Rancho Corral de Tierra (provides nonbreeding and breeding habitat) in San Mateo County. Cattle Hill has mapped occurrences of the California red-legged frog at the site, but neither Sweeney Ridge nor Cattle Hill has known breeding that has been documented to date (URS Corporation 2010, Figure 3). However, both Sweeney Ridge and Cattle Hill provide potential breeding and nonbreeding habitat for the California red-legged frog based upon modeling efforts (URS Corporation 2010, Figure 3). At Rancho Corral de Tierra, several occurrences of the California red-legged frog have been observed (URS Corporation 2010, Figure 3), including along Denniston Creek in the El Granada area and a mapped occurrence and a breeding pond near existing trails in the Montara area. The El Granada area also provides breeding habitat for the frog. In addition, some trails at Rancho Corral de Tierra cross upland aestivation habitat and dispersal habitat for this species (URS Corporation 2010, Figure 3). At Milagra Ridge, the fire road where dog walking is allowed is located more than 800 feet from the pond and more than 1,200 feet from the creek. Therefore, because of the inability for dogs to access both the pond and the creek that support California red-legged frog breeding habitat, all impacts on the California red-legged frog at this site would be considered negligible; therefore, impacts on the California red-legged frog at Milagra Ridge are not discussed further in this section. All other sites listed above will therefore be included in the paragraphs that follow for a detailed impacts analysis.

Although the California red-legged frog is normally associated with wetland areas and water bodies, this species can also use upland and riparian habitat. The USFWS designated critical habitat units for the California red-legged frog in 2001 and revised the units in 2006, 2008, and 2010 (USFWS 2010). Most of Sweeney Ridge is part of critical habitat unit SNM-1 for the California red-legged frog (USFWS 2010). Designated critical habitat for the frog occurs in portions of Cattle Hill (USFWS 2010). There is also a portion of critical habitat located within the El Granada area of Rancho Corral de Tierra along the trails near Denniston Creek (USFWS 2010) and designated critical habitat for the frog occurs throughout Rancho Corral de Tierra (USFWS 2010). In this section, the California red-legged frog is hereafter often referred to as “the frog.”

Muir Beach (Lagoon)

Alternative A: No Action. In the vicinity of Muir Beach, the beach is open to dogs under voice control, and the parking lot, Muir Beach Trail, the pedestrian bridge and the portion of Kaashi Way from the beach to the Coastal Trail are currently open to dogs on leash. The park has closed the lagoon and Redwood Creek, although it has been observed that these closures have been violated and dogs have accessed Redwood Creek. A total of 42 dog-related violations were reported from 2008 through 2016 (tables 15a and 15b). The most common violation was for having dogs off-leash (19 violations over 9 years) (tables 15a and 15b). The fence along the beach side of lower Redwood Creek and the lagoon discourages visitors from accessing the water, but does not physically exclude dogs or visitors from accessing portions of Redwood Creek. The Muir Beach Community is located adjacent to this area, which results in high visitation at Muir Beach on the weekends. The voice control area of Muir Beach encompasses the entrance channel of Redwood Creek and is located immediately adjacent to the shoreline of the lagoon, which has recently been restored. Although there is currently no documented California red-legged frog breeding at Muir Beach, juvenile frogs were recently found moving from an upstream breeding pond (near Green Gulch) that is located away from the Muir Beach site down the creek corridor towards Muir Beach. It is expected that breeding may occur at newly constructed ponds or backwater habitats in the future. Currently, frog life stages that could be affected at the site by dogs include juveniles and adults, since juveniles have recently been found at the site. Even though frog breeding habitat occurs off-site from Muir Beach, near Green Gulch (off the Coastal Fire Road and Kaashi Road), noncompliant dogs under voice control could gain access to this area and affect frog eggs. Eggs could be affected by trampling from off leash dogs, as has been documented at a pond in Pacifica, California by the City of San Francisco in San Mateo County. Dogs could affect adult/juvenile frogs at these sites through impacts to habitat, such as trampling vegetation along the water/wetland edges, or through behavioral disturbance by injuring or causing mortality to individuals of the species in these water bodies. However, there is no published documentation that dogs have either directly or indirectly affected the frog at this location. Therefore, to encompass possible effects, alternative A impacts on the frog would be long term and would range from negligible to minor and adverse; frog eggs, juveniles, and adults could be affected by dogs through occasional behavioral disturbance, such as trampling vegetation along the water/wetland edges, or by injuring or causing mortality to individuals of the species in these water bodies. Impacts would be localized but could constitute a permanent loss if frog eggs are crushed as a result of disturbance by dogs.

Under alternative A, no permit system exists for commercial dog walking. At Muir Beach, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the California red-legged frog.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the California red-legged frog at or in the vicinity of this site.

The fragmentation of existing habitat and the continued colonization of existing habitat by non-native species may represent the most important current threats to California red-legged frogs. The *Muir Beach Wetland and Creek Restoration Project*, the *Lower Redwood Creek Interim Flood Reduction Measures and Floodplain/Channel Restoration* at Muir Beach, the park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect the frog and its habitat. Interim flood control actions at Muir Beach resulted in unauthorized take of California red-legged frogs; formal Section 7 consultation and mitigation measures were initiated to address this take and prevent future occurrences. Habitat restoration and maintenance operations aim to prevent impacts on the frog. Some examples of projects and plans that will specifically provide some benefit to the frog include the *Muir*

Beach Wetland and Creek Restoration Project and the park stewardship programs, which both include provisions for the creation of additional frog habitat. Additionally, the NPS and the California State Lands Commission formulated the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007).

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Muir Beach is uncommon. However, the interim compendium amendment could have a slight beneficial effect on California red-legged frogs and their habitat by limiting the number of dogs commercial dog walkers could have at the site at one time. This permitting could reduce trampling impacts on eggs, juveniles, and adults (physical harm or altering behavior) and on vegetation in and around breeding ponds.

The negligible to long-term minor adverse impacts on the California red-legged frog from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration activities and the interim permitting program should reduce some of the adverse impacts on the California red-legged frog from alternative A. Therefore, the cumulative impacts on the California red-legged frog under this alternative would be expected to be negligible.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Although Lagoon closures are violated frequently, there is no frog breeding at the Muir Beach site, but the site provides nonbreeding habitat; breeding occurs at a pond off site and noncompliant dogs could access this area; frog eggs, juveniles, and adults could be affected by dogs through habitat or behavioral disturbance	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. In the vicinity of Muir Beach, alternative B would allow on-leash dog walking on the beach, the parking area, the Muir Beach Trail including the pedestrian bridge, and the portion of Kaashi Way from the bridge to the beach. The lagoon and Redwood Creek would remain closed to dogs. If dogs are physically restrained on leash at this site and deterred by the existing fence, they should not gain access to the creek or its shorelines or other water bodies and should not affect the frog during juvenile and adult life stages. Therefore, assuming compliance, alternative B would result in negligible impacts on the frog; no measurable or perceptible changes to the frog or breeding/nonbreeding habitat would occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on the frog.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the California red-legged frog at or in the vicinity of this site.

The fragmentation of existing habitat and the continued colonization of existing habitat by non-native species may represent the most important current threats to California red-legged frogs. The *Muir Beach Wetland and Creek Restoration Project*, the *Lower Redwood Creek Interim Flood Reduction Measures and Floodplain/Channel Restoration* at Muir Beach, the park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect the frog and its habitat. Interim flood control actions at Muir Beach resulted in unauthorized take of California red-legged frogs; formal Section 7 consultation and mitigation measures were initiated to address this take and prevent future occurrences. Habitat restoration and maintenance operations aim to prevent impacts on the frog. Some examples of projects and plans that will specifically provide some benefit to the frog include the *Muir Beach Wetland and Creek Restoration Project* and the park stewardship programs, which both include provisions for the creation of additional frog habitat. Additionally, the NPS and the California State Lands Commission formulated the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009k; NPS and CSLC 2007).

The negligible impacts on the California red-legged frog from dogs at Muir Beach under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration activities combined with the negligible impacts on the California red-legged frog under alternative B would result in beneficial cumulative impacts at this park site.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Water bodies would continue to be closed to dogs and the fence would discourage access; physically restraining dogs on leash would prevent dog access to water bodies that may provide habitat to juvenile or adult frogs	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the frog.

Cumulative Impacts. Under alternative C, the cumulative impacts on the frog at this park site would be the same as those under alternative B: beneficial.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The lagoon and Redwood Creek would continue to be closed to dogs; physically restraining dogs on leash would prevent dog access to water bodies that may provide habitat to juvenile or adult frogs	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking in the parking area and on the Muir Beach Trail. The beach and the pedestrian bridge to the beach would be closed to dogs. The lagoon and Redwood Creek are currently closed to dogs. If dogs are physically restrained on leash at this site and deterred by the existing fence, they should not gain access to the creek or its shorelines or other water bodies and should not affect the frog during egg, juvenile, or adult life stages. Additionally, portions of the creek, the lagoon, and the shoreline are in areas where dogs a prohibited under alternative D. Therefore, assuming compliance, alternative D would result in negligible impacts on the frog; no measurable or perceptible changes to the frog or breeding/nonbreeding habitat would occur.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial or permitted dog walking would have no impact on the frog.

Cumulative Impacts. The negligible impacts on the California red-legged frog from dogs at Muir Beach under alternative D were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the restoration activities combined with the negligible impacts on the California red-legged frog under alternative D would result in beneficial cumulative impacts at this park site.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The lagoon and Redwood Creek would continue to be closed to dogs; physically restraining dogs on leash would prevent dog access water bodies and part of the creek, the lagoon, and the shoreline are in areas where dogs a prohibited under alternative D	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. On-leash dog walking would be allowed on the Muir Beach Trail, the pedestrian bridge, the portion of Kaashi Way from the bridge to the beach, and the parking lot. The portion of Muir Beach south of Kaashi Way would be a designated VSCA open to dogs under voice and sight control. The lagoon and Redwood Creek would remain closed to dogs. Although a VSCA has been designated under this alternative, it would not be sited near the habitat in the tidal lagoon and Redwood Creek that supports the frog. Therefore, assuming compliance,

alternative E would result in negligible impacts on the frog; no measurable or perceptible changes to frogs or breeding/nonbreeding habitat would occur.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the frog.

Cumulative Impacts. The negligible impacts on the California red-legged frog from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the restoration activities combined with the negligible impacts on the California red-legged frog under alternative E would result in beneficial cumulative impacts at this park site.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The lagoon and Redwood Creek would continue to be closed to dogs; physically restraining dogs on leash would prevent dog access to the creek and its shorelines; the VSCA would not be sited near Redwood Creek	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the beach, the pedestrian bridge, the Muir Beach Trail, and Kaashi Way from the beach to Pacific Way. The lagoon and Redwood Creek would remain closed to dogs. This alternative would provide protection of the habitat at the tidal lagoon and Redwood Creek that support nonbreeding frog habitat. It is expected that breeding may occur at constructed ponds or backwater habitats in the future. If dogs are physically restrained on leash at this site and deterred by the existing fence, they should not gain access to the creek or its shorelines or other water bodies and should not affect the frog during egg, juvenile, or adult life stages. Additionally, portions of the creek, the lagoon, and the shoreline are in areas where dogs are prohibited under the preferred alternative. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on the frog; no measurable or perceptible changes to the frog or breeding/nonbreeding habitat would occur.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Muir Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Muir Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the frog.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the California red-legged frog at or in the vicinity of this site.

The fragmentation of existing habitat and the continued colonization of existing habitat by non-native species may represent the most important current threats to California red-legged frogs. The *Muir Beach Wetland and Creek Restoration Project*, the *Lower Redwood Creek Interim Flood Reduction Measures and Floodplain/Channel Restoration* at Muir Beach, the park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect the frog and its habitat. Interim flood control actions at Muir Beach resulted in unauthorized take of California red-legged frogs; formal Section 7 consultation and mitigation measures were initiated to address this take and prevent future occurrences. Habitat restoration and maintenance operations aim to prevent impacts on the frog. Some examples of projects and plans that will specifically provide some benefit to the frog include the *Muir Beach Wetland and Creek Restoration Project* and the park stewardship programs, which both include provisions for the creation of additional frog habitat.

The negligible impacts on the California red-legged frog from dogs at Muir Beach under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration activities combined with the negligible impacts on the California red-legged frog from the preferred alternative would result in beneficial cumulative impacts at this park site.

MUIR BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The lagoon and Redwood Creek would continue to be closed to dogs; physically restraining dogs on leash would prevent dog access water bodies and part of the creek, the lagoon, and the shoreline are in areas where dogs a prohibited under the preferred alternative	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Marin Headlands Trails (Tennessee Valley, Rodeo Lake, Rodeo Lagoon)

Alternative A: No Action. Currently, Tennessee Valley is closed to dogs with the exception of the section of the Coastal Trail that crosses Tennessee Valley and the North Miwok Trail from the junction with the Tennessee Valley Trail, where dogs are allowed on leash. This site has documented low to high visitor use, including low to moderate use by dog walkers. From 2008 through 2011, a total of 269 incidents were reported. The majority of the incidents (195) were for having a dog within a closed area and a total of 31 off-leash violations were also reported at the site (table 17a). From 2012 through 2016 an additional 232 incidents were reported (table 17b). The Tennessee Valley pond, which provides breeding habitat for the frog, is difficult to access due to the surrounding dense willow vegetation and as stated above, the majority of Tennessee Valley is closed to dogs. However, the freshwater Rodeo Lake (supports breeding frog populations) and Rodeo Lagoon (which provides nonbreeding frog habitat) are also located within the Marin Headlands Trails site. Rodeo Lake is closed to dogs and is densely vegetated with willows along the shoreline, making access difficult. Rodeo Lagoon is closed to dogs and humans for overall resource protection. Current NPS management to protect frogs at GGNRA has included closing areas to visitors and dogs where frog populations have been observed. There is no physical barrier to prevent dogs or visitors from accessing Rodeo Lake. A fence is proposed along the western shoreline of the lagoon that will deter but not physically exclude dogs from accessing the lagoon from the beach. Additionally, park staff members have estimated that they observe dogs in the lagoon at least once a week, and on a daily basis during good weather. The voice control areas for dogs are located immediately

adjacent to the shoreline of the lagoon, which is not screened and is highly visible and accessible. Frog life stages that could be affected at the site by dogs include eggs, juveniles and adults, Eggs could be affected by trampling from off leash dogs, as has been documented at a pond in Pacifica, California by the City of San Francisco in San Mateo County. However, there is no published documentation that dogs have either directly or indirectly affected the frog at this location. Therefore, to encompass possible effects, alternative A impacts on the frog would be long term and would range from negligible to minor and adverse; frog eggs, juveniles, and adults could be affected by dogs through occasional habitat disturbance, such as trampling vegetation along the water/wetland edges, or by behavioral disturbance, such as injuring or causing mortality to individuals of the species in these water bodies. Impacts would be localized but could constitute a permanent loss if frog eggs are crushed as a result of disturbance by dogs.

Under alternative A, no permit system exists for commercial dog walking. At the Marin Headlands Trails, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the frog.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the California red-legged frog at or in the vicinity of this site.

The fragmentation of existing habitat and the continued colonization of existing habitat by non-native species may represent the most important current threats to California red-legged frogs. The park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect the frog and its habitat. Habitat restoration and maintenance operations aim to prevent impacts on the frogs. An example of the programs that will specifically provide some benefit to the frog is the park stewardship programs, which include provisions for the creation of additional frog habitat.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Marin Headlands Trails is uncommon. However, the interim compendium amendment could have a slight beneficial effect on California red-legged frogs and their habitat (Rodeo Lake and Rodeo Lagoon) by limiting the number of dogs commercial dog walkers could have at the site at one time. This permitting could reduce trampling impacts on eggs, juveniles, and adults (physical harm or altering behavior) and on vegetation in and around breeding ponds.

The negligible to long-term minor adverse impacts on the California red-legged frog from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the creation of additional frog habitat, the actions from the park stewardship programs, and the interim permitting program should reduce some of the adverse effects of alternative A. Therefore, negligible cumulative impacts would be expected on the California red-legged frog under this alternative.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	The site provides both breeding (Rodeo Lake) and nonbreeding (Rodeo Lagoon) areas that are accessed by noncompliant dogs; eggs, juveniles, and adults could be affected by dogs through habitat disturbance as well as behavioral disturbance	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs at the Marin Headlands site and Rodeo Lagoon and Rodeo Lake would still be closed to dogs. This alternative would be most protective of the frog and the breeding ponds at Tennessee Valley and Rodeo Lake as well as the nonbreeding habitat at Rodeo Lagoon and would maintain the integrity of the entire Marin Headlands Trails site. Assuming compliance, alternative B would result in no impact on the frog.

Since dogs would not be allowed at the Marin Headlands Trails, there would be no impact from commercial dog walkers on the frog.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the California red-legged frog at or in the vicinity of this site.

The fragmentation of existing habitat and the continued colonization of existing habitat by non-native species may represent the most important current threats to California red-legged frogs. The park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect the frog and its habitat. Habitat restoration and maintenance operations aim to prevent impacts on the frogs. An example of the programs that will specifically provide some benefit to the frog is the park stewardship programs, which include provisions for the creation of additional frog habitat.

The lack of impacts on the California red-legged frog from dogs at the Marin Headlands Trails under alternative B was considered together with the effects of the projects mentioned above. The beneficial effects from the creation of additional frog habitat and the park stewardship programs and other actions combined with the lack of impacts from alternative B should result in beneficial cumulative impacts on the California red-legged frog under this alternative.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impacts, assuming compliance	Dogs would be prohibited at the site	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor. This corridor extends from the Rodeo Beach

parking lot to the intersection of Bunker and McCullough roads via the North Lagoon Loop Trail, Miwok Trail, and Rodeo Valley Trail including the connector trails from the Rodeo Valley Trail to the Smith Road trailhead. On-leash dog walking would be allowed on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), and the Batteries Loop Trail. Dogs would be physically restrained on a leash and would be allowed on fewer trails altogether compared to alternative A. Therefore, assuming compliance, alternative C would result in negligible impacts on the frog; no measurable or perceptible changes in frogs or breeding/nonbreeding habitat would occur.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Marin Headlands Trails is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the frog.

Cumulative Impacts. The negligible impacts on the California red-legged frog from dogs at the Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the creation of additional frog habitat and the park stewardship programs and other actions combined with the negligible impacts from alternative C should result in beneficial cumulative impacts on the California red-legged frog under this alternative.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to the Tennessee Valley pond, Rodeo Lake, or Rodeo Lagoon	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B (no dogs on site), and impacts would be the same, assuming compliance: no impact.

Since dogs would not be allowed at the Marin Headlands Trails, there would be no impact from commercial dog walkers on the frog.

Cumulative Impacts. Under alternative D, the cumulative impacts on the frog at this park would be the same as those under alternative B: beneficial.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Conzelman Coastal Trail from Highway 101 to the McCullough intersection and then to the Coastal Trail Bike Route, including Julian Road, to Rodeo Beach parking lot. On-leash

dog walking would be available on the Old Bunker Fire Road Loop (which includes a section of the Coastal Trail), Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, Marin Drive, Rodeo Avenue Trail, and Morning Sun Trail. Impacts would be the same as those under alternative C, assuming compliance: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Marin Headlands Trails is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the frog.

Cumulative Impacts. The negligible impacts on the California red-legged frog from dogs at the Marin Headlands Trails under alternative E were considered together with the effects of the projects mentioned above in alternative B. The beneficial effects from the creation of additional frog habitat and the park stewardship programs and other actions combined with the negligible impacts from alternative E should result in beneficial cumulative impacts on the California red-legged frog under this alternative.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would prevent dog access to the Tennessee Valley pond, Rodeo Lagoon, and Rodeo Lake	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. On-leash dog walking would be allowed along the Lower Rodeo Valley Trail Corridor, which extends from the Rodeo Beach parking lot to the intersection of Bunker and McCullough roads via the North Lagoon Loop Trail, Miwok and Rodeo Valley trails, and the connector trail from Rodeo Valley Trail to the Smith Road trailhead. On-leash dog walking would be available on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), Batteries Loop Trail, Rodeo Avenue Trail, and Morning Sun Trail. Dogs would be physically restrained on leash and would be allowed on fewer trails altogether. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on the frog; no measurable or perceptible changes in frogs or breeding/nonbreeding habitat would occur.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under the preferred alternative, permits would be issued to individual or commercial dog walkers to walk more than three dogs on a short segment of the North Lagoon Loop Trail. Allowing dog walkers with more than three dogs on the North Lagoon Loop Trail from the Rodeo Beach parking lot to the pedestrian bridge creates a loop with the permitted areas allowed under the preferred alternative for Rodeo Beach. Since commercial dog walking is not common at Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the frog.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are

currently having, or have the potential to have effects on the California red-legged frog at or in the vicinity of this site.

The fragmentation of existing habitat and the continued colonization of existing habitat by non-native species may represent the most important current threats to California red-legged frogs. The park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect the frog and its habitat. Habitat restoration and maintenance operations aim to prevent impacts on the frog. An example of the programs that will specifically provide some benefit to the frog is the park stewardship programs, which include provisions for the creation of additional frog habitat.

The negligible impacts on the California red-legged frog from dogs at the Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the creation of additional frog habitat and the actions from the park stewardship programs combined with the negligible impacts from the preferred alternative should result in beneficial cumulative impacts on the California red-legged frog.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE F CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to the Tennessee Valley pond, Rodeo Lake, or Rodeo Lagoon	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Mori Point

Alternative A: No Action. Under current conditions, dogs are allowed on leash on all trails and on the portion of the beach owned by NPS at Mori Point. Although current GGNRA regulations require dogs to be leashed at Mori Point, unleashed dogs are often observed at the site. This site has moderate to high visitor use by dog walkers, and off-leash violations totaled 146 from 2008 through 2011, with only 8 off-leash violations reported from 2012 through 2016 (tables 27a and 27b). The NPS created four ponds at Mori Point to enhance the freshwater wetland habitat and to provide foraging habitat for the San Francisco garter snake, which also provides breeding and rearing habitat for the California red-legged frog. Educational signs and fences have been placed around the ponds and wetland habitat at Mori Point to prevent direct impacts on frogs and frog habitat; however, dogs have occasionally been observed in the ponds. In addition, the Pollywog Trail at Mori Point is adjacent to the ponds, which is near the unnamed (and unfenced) creek where frogs are frequently found at this site and occasional breeding has occurred at this site (Fong et al. 2010). Frog life stages that could be affected by dogs include eggs, juveniles, and adults. Eggs could be affected by trampling from off leash dogs, as has been documented at a pond in Pacifica, California by the City of San Francisco in San Mateo County. However, there is no documentation that dogs have either directly or indirectly affected the frog at Mori Point. Therefore, to encompass possible effects, alternative A impacts on the frog would range from negligible to minor and adverse; frog eggs, juveniles, and adults could be affected by dogs through occasional habitat disturbance, such as trampling vegetation along the water/wetland edges, or by behavioral disturbance, such as injuring or causing mortality to individuals of the species in these water bodies. Impacts would be localized but could constitute a permanent loss if frog eggs are crushed as a result of disturbance by dogs.

Under alternative A, no permit system exists for commercial dog walking. At Mori Point, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the frog.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the California red-legged frog at or in the vicinity of this site.

The fragmentation of existing habitat and the continued colonization of existing habitat by non-native species may represent the most important current threats to California red-legged frogs. The park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect the frog and its habitat. Habitat restoration and maintenance operations aim to prevent impacts on the frog. An example of the programs that will specifically provide some benefit to the frog is the park stewardship programs, which include provisions for the creation of additional frog habitat. The *Mori Point Restoration and Trail Plan* project protected and enhanced habitat for the frog at Mori Point by guiding visitor use away from restoration areas and potential habitat (NPS 2010e, 1, GGNPC 2016, 1).

Fragments of unique plant and animal habitats within Pacifica, known as Significant Natural Resource Areas (natural areas), have been preserved within the parks that are managed by the San Francisco Recreation and Park Department (SFRPD). The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years (SFPD 2011, 1). The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica and addresses dog walking (including on-leash dog walking and off-leash DPAs) in these areas (SFPD 2011, 261-262). The California red-legged frog has been recorded at Sharp Park (SFPD 2011, 278), which is a natural area located in Pacifica adjacent to Mori Point and managed under the SNRAMP. Implementation of the Sharp Park restoration activities under the SNRAMP would have a short-term adverse effect on special-status species such as the California red-legged frog, although numerous mitigation measures would be employed to reduce adverse impacts (SFPD 2011, 40). Sharp Park has an existing extensive wetland complex (known as Laguna Salada) located between the golf course and the earthen seawall separating it from the sand beach. Mitigation plans that are part of the Sharp Park restoration under the SNRAMP include creating, restoring, and enhancing California red-legged frog and San Francisco garter snake habitat at the Laguna Salada wetland complex in the marsh area and associated uplands(SFPD 2011, 47; 97-98). This restoration could provide long-term protection at Laguna Salada for the California red-legged frog as well as the San Francisco garter snake. Therefore, project activities included in the SNRAMP will protect this listed species and provide long-term beneficial impacts to the California red-legged frog.

The negligible to long-term minor adverse impacts on the California red-legged frog from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other restoration projects such as the *Mori Point Restoration and Trail Plan* project at this park site and the SNRAMP should reduce some of the adverse impacts on the California red-legged frog from alternative A. Therefore, cumulative impacts on the California red-legged frog would be expected to be negligible.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Dogs have occasionally been observed in fenced ponds that support frog breeding habitat; eggs, juveniles, and adults could be affected by dogs through habitat and behavioral disturbance	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Mori Coastal Trail and on the portion of the beach owned by the NPS, but dogs would not be allowed on the Pollywog Trail adjacent to the ponds and the unnamed creek. Educational signs and fences have been placed around the ponds and wetland habitat at Mori Point to prevent direct impacts on frogs and frog habitat. If dogs are physically restrained on leash at this site and deterred by fences, they should not gain access to the ponds and should not affect the frog during egg, juvenile, and adult life stages. In addition, reducing the number of trails available for dog walking compared to alternative A would result in some benefits to the adjacent upland habitats used by both San Francisco garter snakes and California red-legged frogs. Therefore, assuming compliance, alternative B would result in negligible impacts on the frog; no measurable or perceptible changes in the frog or breeding/nonbreeding habitat would occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on the frog.

Cumulative Impacts. The negligible impacts on the California red-legged frog from dogs at Mori Point under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the park stewardship programs and other restoration projects such as the *Mori Point Restoration and Trail Plan* project at this park site and the SNRAMP combined with the negligible impacts on the California red-legged frog from alternative B would result in beneficial cumulative impacts.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to ponds and dogs would not be allowed on the Pollywog Trail adjacent to the ponds	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking on the Mori Coastal Trail, Old Mori Trail, and the portion of the beach owned by the NPS, but dogs would not be allowed on the Pollywog Trail adjacent to the ponds of the unnamed creek. In addition, reducing the number of trails available for dog walking compared to alternative A would result in some benefits to the adjacent upland habitats used by San Francisco garter snakes and California red-

legged frogs. Therefore, assuming compliance, alternative C would result in negligible impacts on the frog; no measurable or perceptible changes in frogs or breeding/nonbreeding habitat would occur.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the frog.

Cumulative Impacts. The negligible impacts on the California red-legged frog from dogs at Mori Point under alternative C were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the park stewardship programs and other restoration projects such as the *Mori Point Restoration and Trail Plan* project at this park site and the SNRAMP combined with the negligible impacts on the California red-legged frog from alternative C would result in beneficial cumulative impacts.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to ponds and dogs would not be allowed on the Pollywog Trail adjacent to the ponds	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would not allow dogs at the site and therefore would result in no impact on the frog.

Since dogs would not be allowed at Mori Point, there would be no impact from commercial dog walkers on the frog.

Cumulative Impacts. The lack of impacts on the California red-legged frog from dogs at Mori Point under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the park stewardship programs and other restoration projects such as the *Mori Point Restoration and Trail Plan* project at this park site and SNRAMP combined with the lack of impacts on the California red-legged frog from alternative D would result in beneficial cumulative impacts.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails as alternative C, but with the addition of the Pollywog Trail, which leads past the ponds that provide habitat for the frog. The Pollywog Trail is also adjacent to the unnamed (and unfenced) creek where frogs are frequently found at this site. Dogs would be physically

restrained on leash and the leash policy would be enforced, but dogs could directly affect frog habitat even while on leash and being on the Pollywog Trail. However, reducing the number of trails available for dog walking compared to alternative A would result in some benefits to the adjacent upland habitats used by San Francisco garter snakes and California red-legged frogs. Therefore, assuming compliance, alternative E would result in a negligible to long-term minor adverse impacts on the frog because perceptible changes in frogs or breeding/nonbreeding habitat could occur in a small, localized area.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the frog.

Cumulative Impacts. The negligible to long-term minor adverse impacts on the California red-legged frog from dogs at Mori Point under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the park stewardship programs and other restoration projects such as the *Mori Point Restoration and Trail Plan* project at this park site and the SNRAMP should reduce some of the adverse impacts on the California red-legged frog from alternative E. Therefore, cumulative impacts on the California red-legged frog would be expected to be negligible.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to ponds, although on-leash dogs would be allowed on the Pollywog Trail adjacent to the ponds, which is close to the unfenced creek where frogs are frequently found	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dogs on the Mori Coastal Trail, Old Mori Trail, Pollywog Trail, Mori Headlands Trail, and the portion of the beach owned by the NPS. The Pollywog Trail is located adjacent to the unnamed (and unfenced) creek where frogs are frequently found at this site. Dogs would be physically restrained on leash and the leash policy would be enforced, but dogs could directly affect frog habitat even while on leash along the Pollywog Trail. However, reducing the number of trails available for dog walking compared to alternative A would result in some benefits to the adjacent upland habitats used by both San Francisco garter snakes and California red-legged frogs. Therefore, assuming compliance, the preferred alternative would result in a negligible to long-term minor adverse impacts on the frog because perceptible changes in frogs or breeding/nonbreeding habitat could occur in a small, localized area.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the frog.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the California red-legged frog at or in the vicinity of this site.

The fragmentation of existing habitat and the continued colonization of existing habitat by non-native species may represent the most important current threats to California red-legged frogs. The park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect the frog and its habitat. Habitat restoration and maintenance operations aim to prevent impacts on the frogs. An example of the programs that will specifically provide some benefit to the frog is the park stewardship programs, which include provisions for the creation of additional frog habitat. The *Mori Point Restoration and Trail Plan* project protected and enhanced habitat for the frog at Mori Point by guiding visitor use away from restoration areas and potential habitat (NPS 2010e, 1, GGNPC 2016, 1).

Fragments of unique plant and animal habitats within Pacifica, or natural areas, have been preserved within the parks that are managed by the San Francisco Recreation and Park Department (SFRPD). The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years (SFPD 2011, 1). The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica and addresses dog walking (including on-leash dog walking and off-leash DPAs) in these areas (SFPD 2011, 261-262). The California red-legged frog has been recorded at Sharp Park (SFPD 2011, 278), which is a natural area located adjacent to Mori Point and managed under the SNRAMP. Implementation of the Sharp Park restoration activities under the SNRAMP would have a short-term adverse effect on special-status species such as the California red-legged frog, although numerous mitigation measures would be employed to reduce adverse impacts (SFPD 2011, 40). Sharp Park has an existing extensive wetland complex (known as Laguna Salada) located between the golf course and the earthen seawall separating it from the sand beach. Mitigation plans that are part of the Sharp Park restoration under the SNRAMP include creating, restoring, and enhancing California red-legged frog and San Francisco garter snake habitat at the Laguna Salada wetland complex in the marsh area and associated uplands (SFPD 2011, 47; 97-98). This restoration could provide long-term protection at Laguna Salada for the California red-legged frog as well as the San Francisco garter snake. Therefore, project activities included in the SNRAMP will protect this listed species and provide long-term beneficial impacts to the California red-legged frog.

The negligible to long-term minor adverse impacts on the California red-legged frog from dogs at Mori Point under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other restoration projects such as the *Mori Point Restoration and Trail Plan* project at this park site and the SNRAMP combined with the negligible to long-term minor adverse impacts on the California red-legged frog from the preferred alternative would result in negligible cumulative impacts.

MORI POINT PREFERRED ALTERNATIVE F CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to ponds, although on-leash dogs would be allowed on the Pollywog Trail adjacent to the ponds, which is close to the unfenced creek where frogs are frequently found	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Sweeney Ridge/Cattle Hill

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed on all trails at Sweeney Ridge except the Notch Trail, which is closed to dogs. This site has documented low to moderate visitor use by dog walkers, and off-leash dog walking occurs along the trails of Sweeney Ridge; off-leash incidents totaled 115 from 2008 through 2011 with an additional 11 violations between 2012 and 2016 (tables 29a and 29b). Cattle Hill is currently not part of GGNRA, but unrestricted dog walking occurs at this site. At Cattle Hill, there are mapped occurrences of the California red-legged frog, but no known breeding has been documented to date (URS Corporation 2010, Figure 3). However, Cattle Hill provides potential breeding and nonbreeding habitat for the California red-legged frog based upon modeling efforts for these sites (URS Corporation 2010, Figure 3). Also, designated critical habitat for the frog occurs throughout some areas of Cattle Hill (USFWS 2009c). Sweeney Ridge has no known breeding that has been documented to date (URS Corporation 2010, Figure 3). However, Sweeney Ridge provides potential breeding and nonbreeding habitat for the California red-legged frog based upon modeling efforts for these sites (URS Corporation 2010, Figure 3). There is also a small portion of critical habitat unit SNM-1 that is located in the southern corner of Sweeney Ridge (USFWS 2009c). Therefore, this section analyzes impacts to both nonbreeding and critical habitat for juvenile and adult life stages of the frog because no known breeding occurs at this site to date. Dogs could affect adult/juvenile frogs at these sites through habitat disturbance, such as trampling vegetation along the water/wetland edges, or by behavioral disturbance such as injuring or causing mortality to individuals of the species at this site. Even so, there is no documentation that dogs have either directly or indirectly affected the frog at Sweeney Ridge or Cattle Hill.

Therefore, to encompass possible effects, alternative A impacts at Sweeney Ridge/Cattle Hill on the frog would be long term and would range from negligible to minor and adverse. A few individuals (juveniles and adults) of the species in a small, localized area could be occasionally affected by disturbance from dogs but essential features of critical habitat would not be impacted and reproductive success of individuals of the species would not be affected.

Under alternative A, no permit system exists for commercial dog walking. Commercial dog walking is uncommon at Sweeney Ridge/Cattle Hill; therefore, commercial dog walking would have negligible impacts on the frog.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge/Cattle Hill were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the California red-legged frog at or in the vicinity of this site.

The fragmentation of existing habitat and the continued colonization of existing habitat by non-native species may represent the most important current threats to California red-legged frogs. The park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect the frog and its habitat. Habitat restoration and maintenance operations aim to prevent impacts on the frog. An example of the programs that will specifically provide some benefit to the frog is the park stewardship programs, which include provisions for the creation of additional frog habitat. As discussed under Mori Point, mitigation plans that are part of the Sharp Park (located adjacent to Sweeney Ridge) restoration under the SNRAMP include creating, restoring, and enhancing California red-legged frog and San Francisco garter snake habitat at the Laguna Salada wetland complex in the marsh area and associated uplands (SFPD 2011, 47; 97-98). This restoration could provide long-term protection at Laguna Salada for the California red-legged frog as well as the San Francisco garter snake.

The negligible to long-term minor adverse impacts on the California red-legged frog from dogs at Sweeney Ridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other actions such as the SNRAMP should reduce some of the adverse impacts on the California red-legged frog from alternative A. Therefore, cumulative impacts on the California red-legged frog under this alternative would be expected to be negligible.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE A CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Sites have no known breeding habitat but have mapped critical habitat; juveniles and adults could be affected by dogs through habitat disturbance as well as behavioral disturbance or causing injury or mortality to individuals	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would not allow dogs at either site and would provide protection for a large area of relatively undisturbed contiguous habitat. Assuming compliance, alternative B would result in no impact on the frog.

Since dogs would not be allowed at Sweeney Ridge/Cattle Hill, there would be no impact from commercial dog walkers on the frog.

Cumulative Impacts. The lack of impacts on the California red-legged frog from dogs at Sweeney Ridge/Cattle Hill under alternative B was considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the park stewardship programs as well as the SNRAMP combined with the lack of impacts on the California red-legged frog from alternative B would result in beneficial cumulative impacts.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE B CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, no dogs would be allowed at Sweeney Ridge. Therefore, assuming compliance, this alternative would result in no impact on the frog at Sweeney Ridge. At Cattle Hill, dogs would be allowed on leash on the Baquiano Trail from Fassler Avenue up to and including the Farallon View Trail. Cattle Hill has mapped occurrences of the California red-legged frog at the site, but no known breeding has been documented to date (URS Corporation 2010, Figure 3). However, Cattle Hill provides potential breeding and nonbreeding habitat for the California red-legged frog based upon modeling efforts for these sites (URS Corporation 2010, Figure 3). Also, designated critical habitat for the frog occurs throughout some areas of Cattle Hill (USFWS 2009c). Physically restraining dogs on leash would not allow dog access to any water bodies that support the frogs or nonbreeding or critical habitat. Therefore, assuming compliance, alternative C would result in negligible impacts on the frog at Cattle Hill because no measurable or perceptible changes in frogs or critical habitat or nonbreeding habitat would occur.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since dog walking would not be allowed at Sweeney Ridge, commercial dog walking under alternative C would have no impact on the frog. Since commercial dog walking is not common at Cattle Hill, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the frog.

Cumulative Impacts. The negligible impacts on the California red-legged frog from dogs at Cattle Hill under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the park stewardship programs as well as the SNRAMP combined with the negligible impacts on the California red-legged frog from alternative C would result in negligible cumulative impacts at Cattle Hill. At Sweeney Ridge, the lack of impacts combined with the beneficial effects from the park stewardship programs would result in beneficial cumulative impacts.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE C CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact at Sweeney Ridge, assuming compliance	Dogs would be prohibited at Sweeney Ridge	Beneficial, assuming compliance	Beneficial cumulative impacts
Negligible impacts, assuming compliance, at Cattle Hill	At Cattle Hill, physically restraining dogs would prevent dog access to any water bodies that support the frog	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B (no dogs on Sweeney Ridge or Cattle Hill sites), and impacts on the frog would be the same, assuming compliance: no impact.

Since dogs would not be allowed at Sweeney Ridge/Cattle Hill, there would be no impact from commercial dog walkers on the frog.

Cumulative Impacts. Under alternative D, the cumulative impacts on the frog at this park site would be the same as those under alternative B: beneficial.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE D CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. At Sweeney Ridge, alternative E would allow on-leash dog walking along Sweeney Ridge Trail from Portola Discovery Site to the Notch Trail and on to the junction with the Mori Ridge Trail. On-leash dog walking would also be allowed on Sneath Lane. At Cattle Hill, dogs would be allowed on leash on the Baquiano Trail from Fassler Avenue up to and including the Farallon View Trail. Cattle Hill has mapped occurrences of the California red-legged frog at the site, but neither Sweeney Ridge nor Cattle Hill has known breeding that has been documented to date (URS Corporation 2010, Figure 3). However, both Sweeney Ridge and Cattle Hill provide potential breeding and nonbreeding habitat for the California red-legged frog based upon modeling efforts for these sites (URS Corporation 2010, Figure 3). There is also a small portion of critical habitat unit SNM-1 that is located in the southern corner of Sweeney Ridge and designated critical habitat for the frog occurs throughout some areas of Cattle Hill (USFWS 2009c).

The trails at Sweeney Ridge/Cattle Hill are long, with high quality habitat directly adjacent to the trails, and the on-leash dog trails under this alternative are a greater portion of the entire site compared to alternatives B, C, and D. Additionally, Cattle Hill trails would allow on-leash dog walking under this alternative, and these trails generally receive low to moderate use. However, because the frog is generally found in and around the ponds at this site, the on-leash requirements would prevent dog access to any water bodies that support the frog. Therefore, assuming compliance, alternative E would result in negligible impacts on the frog; no measurable or perceptible changes in frogs, critical habitat, or nonbreeding habitat would occur at Sweeney Ridge/Cattle Hill.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking activity is not common at Sweeney Ridge or Cattle Hill, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the frog.

Cumulative Impacts. The negligible impacts on the California red-legged frog from dogs at Sweeney Ridge/Cattle Hill under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the park stewardship programs as well as the SNRAMP and other actions combined with the negligible impacts on the California red-legged frog from alternative E would result in negligible cumulative impacts.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE E CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to any water bodies that support the frog	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. On-leash dog walking would be allowed at Sweeney Ridge on Sneath Lane and the Sweeney Ridge Trail between the Portola Discovery site and the Nike Missile Site. On-leash dog walking would be allowed at Cattle Hill on the Baquiano Trail from Fassler Avenue up to and including the Farallon View Trail. Physically restraining dogs on leash would not allow dog access to any water bodies that support the frogs or nonbreeding or critical habitat. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on the frog at Sweeney Ridge/Cattle Hill because no measurable or perceptible changes in frogs or critical habitat or nonbreeding habitat would occur.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Sweeney Ridge/Cattle Hill, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the frog.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge/Cattle Hill were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the California red-legged frog at or in the vicinity of this site.

As discussed under Mori Point, mitigation plans that are part of the Sharp Park (located adjacent to Sweeney Ridge) restoration under the SNRAMP include creating, restoring, and enhancing California red-legged frog and San Francisco garter snake habitat at the Laguna Salada wetland complex in the marsh area and associated uplands (SFPD 2011, 47; 97-98). This restoration could provide long-term protection at Laguna Salada for the California red-legged frog as well as the San Francisco garter snake.

The fragmentation of existing habitat and the continued colonization of existing habitat by non-native species may represent the most important current threats to California red-legged frogs. The park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect the frog and its habitat. Habitat restoration and maintenance operations aim to prevent impacts on the frog. An example of the programs that will specifically provide some benefit to the frog is the park stewardship programs, which include provisions for the creation of additional frog habitat.

The negligible impacts at Sweeney Ridge combined with the beneficial impacts from the projects mentioned above would result in negligible cumulative impacts. The negligible impacts on the California red-legged frog from dogs at Cattle Hill under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs, the SNRAMP and other actions combined with the negligible impacts on the California red-legged frog at Cattle Hill from the preferred alternative would also result in negligible cumulative impacts.

SWEENEY RIDGE/CATTLE HILL PREFERRED ALTERNATIVE F CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance, at both sites	Physically restraining dogs would prevent dog access to any water bodies that support the frog	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Rancho Corral de Tierra

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed at Rancho Corral de Tierra. Staff regularly working at Rancho characterize use by dog walkers as moderate overall with moderate to high use in the Montara area; compliance with the leash law is generally low. Because Rancho Corral de Tierra was transferred to NPS in December 2011, law enforcement statistics are not available for this site. At Rancho Corral de Tierra, several occurrences of the California red-legged frog have been observed (URS Corporation 2010, Figure 3), including a mapped occurrence and a breeding pond near existing dog walking trails at the Montara area, and occurrences along Denniston Creek in the El Granada area. One area of the El Granada area also provides breeding habitat for the frog in a waterbody located approximately 800 feet from an existing trail. In addition, existing trails at Rancho Corral de Tierra cross upland aestivation habitat and dispersal habitat for this species (URS Corporation 2010, Figure 3). Critical habitat for California red-legged frogs encompasses most of the Rancho Corral de Tierra site (USFWS 2009c; USFWS 2010). There is also a portion of critical habitat unit SNM-1 that is located within the El Granada area along the trails and habitat near Denniston Creek (USFWS 2009c; USFWS 2010). Therefore, this section analyzes impacts to nonbreeding and critical habitat for juvenile and adult life stages of the frog.

Rancho has low compliance with the leash law and NPS rangers have observed off-leash dogs running in areas with potentially sensitive habitat. Under alternative A, dogs could affect adult/juvenile frogs at Rancho through habitat disturbance, such as trampling vegetation along the water/wetland edges, or by behavioral disturbance such as injuring or causing mortality to individuals of the species at this site by jumping into unfenced waterbodies that provide breeding habitat. Park staff observed a dog swimming in a waterbody that had previously supported frogs on multiple occasions. Even so, there is no documentation that dogs have either directly or indirectly affected the frog at Rancho Corral de Tierra. Therefore, to encompass possible effects, alternative A impacts on the frog would be long term and would range from negligible to minor and adverse. A few individuals (juveniles and adults) of the species in a small, localized area (Rancho Corral de Tierra) could be occasionally affected by disturbance from dogs but essential features of critical habitat would not be impacted and reproductive success of individuals of the species would not be affected.

Under alternative A, no permit system exists for commercial dog walking. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the frog.

Cumulative Impacts. Projects and actions in and near Rancho Corral de Tierra were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the California red-legged frog at or in the vicinity of this site. Since the Rancho Corral de Tierra site has been transferred to NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking.

Additional actions have had, are currently having, or have the potential to have adverse impacts on wildlife and wildlife habitat at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involved constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica and Montara (County of San Mateo 2016d, 1). The Devil's Slide Bypass highway project resulted in a temporary loss of California red-legged frog foraging and potential breeding habitat (FHA and CADOT 2002, 71). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The fragmentation of existing habitat and the continued colonization of existing habitat by non-native species may represent the most important current threats to California red-legged frogs. Since the Rancho Corral de Tierra site has been transferred to the NPS, general protection of the site and associated natural resources would occur. Additionally, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect the frog and its habitat. Habitat restoration and maintenance operations aim to prevent impacts on the frog.

The negligible to long-term minor adverse impacts on the California red-legged frog from dogs at Rancho Corral de Tierra under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs and other actions should reduce some of the adverse impacts on the California red-legged frog from alternative A. Therefore, cumulative impacts on the California red-legged frog under this alternative would be expected to be negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE A CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Site has upland aestivation habitat, dispersal habitat, wetland breeding site, and streams provide potential breeding habitat; critical habitat is throughout the site; juveniles and adults could be affected by dogs through habitat disturbance trampling as well as behavioral disturbance or causing injury or mortality to individuals	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on certain trails at Rancho Corral de Tierra in the Montara and El Granada areas, which were identified by the local dog walking group as key areas for this use. The dog walking trails at Rancho Corral de Tierra cross upland aestivation habitat, dispersal habitat, and streams that provide potential breeding habitat. There is critical habitat throughout the property, including areas along dog walking trails near Denniston Creek (USFWS 2010). However, if dogs are physically restrained on leash at this site, they should not gain access to frog habitat and should not affect juvenile or adult frogs. Therefore, assuming compliance, alternative B would result in negligible impacts on the frog; no measurable or perceptible changes to frogs, nonbreeding habitat, or critical habitat would occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the frog.

Cumulative Impacts. The negligible impacts on the California red-legged frog from dogs at Rancho Corral de Tierra under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the park stewardship programs combined with the negligible impacts on the California red-legged frog from alternative B would result in negligible cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE B CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to frog habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed on certain trails within two areas open to dog walking at Rancho Corral de Tierra in the Montara and El Granada areas. The dog walking trails at cross upland aestivation habitat, dispersal habitat, and streams that provide potential breeding habitat. A VSCA is proposed under alternative C in the Montara area between Le Conte Street and Tamarind Street, in an open grassy area near the Farallone View School. The proposed VSCA is not located within critical habitat for the frog, but in upland and dispersal habitat for the frog (URS Corporation 2010, Figure 3) and within 0.4 miles of an existing breeding site in a wetland area. Vegetation in the VSCA is not comprised of sensitive vegetation, but mostly annual, non-native grasses in a wet area. This vegetation within upland and dispersal habitat for the frog in the VSCA would become trampled and would likely turn to mud. As stated previously, critical habitat is located within the majority of the entire Rancho Corral de Tierra site, including both the Montara and El Granada areas (USFWS 2010). To encompass possible effects of the VSCA, alternative C impacts on the frog would be long term and would range from negligible to minor and adverse. A few individuals (juveniles and adults) of the species in a small, localized area (Rancho Corral de Tierra) could be occasionally affected by disturbance from dogs at the wetland area near the VSCA. Essential features of critical habitat would not likely be impacted and reproductive success of individuals of the species would not be affected, but the level of impact would be dependent on use of the site by visitors and dogs.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking under this alternative would have negligible impacts on the frog.

Cumulative Impacts. The negligible to long-term minor adverse impacts on the California red-legged frog from dogs at Rancho Corral de Tierra under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the park stewardship programs combined with the negligible to long-term minor adverse impacts on the California red-legged frog from alternative C would result in negligible cumulative impacts at Rancho Corral de Tierra.

RANCHO CORRAL DE TIERRA ALTERNATIVE C CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Physically restraining dogs on leash would prevent dog access to frog habitat, but VSCA is located within upland and dispersal habitat and near a wetland breeding site	No change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed in the Montara area on two trails: Old San Pedro Mountain Road and the Farallon Cutoff. Dogs would be prohibited in other areas of the site, including the entire El Granada area. If dogs are not allowed in the El Granada area (which supports critical habitat for the frog) and are physically restrained on leash at Montara on two existing trails, they should not gain access to frog habitat and should not affect juvenile or adult frogs. Therefore, assuming compliance, alternative D would result in negligible impacts on the frog. No measurable or perceptible changes to frogs, nonbreeding habitat, or critical habitat would occur.

Since no commercial dog walking would be allowed and no permits for walking more than three dogs would be issued under alternative D, no impact on the frog from commercial and permitted dog walking would occur.

Cumulative Impacts. Under alternative D, the cumulative impacts on the frog at this park site would be the same as those under alternative B: beneficial.

RANCHO CORRAL DE TIERRA ALTERNATIVE D CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to frog habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same: ranging from negligible to long-term minor and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Currently, Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the frog.

Cumulative Impacts. The negligible impacts on the California red-legged frog from dogs at Rancho Corral de Tierra under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the park stewardship programs and other actions combined with the negligible impacts on the California red-legged frog from alternative E would result in negligible cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE E CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Physically restraining dogs on leash would prevent dog access to frog habitat, but VSCA is located within upland and dispersal habitat and a wetland breeding site	No change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on designated trails in three areas. Trails in Montara include Old San Pedro Mountain Road, LeConte Trail, Corona Pedro Trail, and Farallon Cutoff from the park boundary in the west to the intersection with Corona Pedro Trail. On-leash trails in the El Granada area include the Denniston Ridge Trail between the San Carlos Trail and its intersection with the Clipper Ridge Trail, the Clipper Ridge Trail, the Memorial Loop, the Almeria Trail, and the San Carlos Trail. In the Moss Beach area, on-leash dog walking would be allowed on the Vincente Ridge and Ranchette Trails. The dog walking trails cross upland aestivation habitat, dispersal habitat, and streams that provide potential breeding habitat. Critical habitat is located throughout the site, including in the El Granada area along dog walking trails near Denniston Creek (USFWS 2010). However, if dogs are physically restrained on leash at this site, they should not gain access to frog habitat and should not affect juvenile or adult frogs. The preferred alternative would also establish a VSCA at Flat Top; however, the area is a former quarry site and is not comprised of suitable habitat for the California red-legged frog. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on the frog. No measurable or perceptible changes to frogs, nonbreeding habitat, or critical habitat would occur.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the frog.

Cumulative Impacts. Projects and actions in and near Rancho Corral de Tierra were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the California red-legged frog at or in the vicinity of this site. Since the Rancho Corral de Tierra site has been transferred to NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking.

Additional actions have had, are currently having, or have the potential to have adverse impacts on wildlife and wildlife habitat at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involved constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica and Montara (County of San Mateo 2016d, 1). The Devil's Slide Bypass highway project resulted in a temporary loss of California red-legged frog foraging and potential breeding habitat (FHA and CADOT 2002, 71). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

The fragmentation of existing habitat and the continued colonization of existing habitat by non-native species may represent the most important current threats to California red-legged frogs. Since the Rancho

Corral de Tierra site has been transferred to the NPS, there would be general protection of the site and associated natural resources. Additionally, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, habitat restoration programs, and maintenance operations all have the potential to affect the frog and its habitat. Habitat restoration and maintenance operations aim to prevent impacts on the frog.

The negligible impacts on the California red-legged frog from dogs at Rancho Corral de Tierra under the preferred alternative were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the other actions combined with the negligible impacts on the California red-legged frog from the preferred alternative would result in negligible cumulative impacts.

RANCHO CORRAL DE TIERRA PREFERRED ALTERNATIVE F CONCLUSION TABLE

California Red-legged Frog Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to frog habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts

IMPACTS TO THE SAN FRANCISCO GARTER SNAKE (FEDERALLY AND STATE ENDANGERED) BY SITE AND ALTERNATIVE

In addition to federal and state listing, the San Francisco garter snake is a fully protected animal in California. In GGNRA, the San Francisco garter snake (hereafter often referred to as “the snake”) has been documented as occurring at Mori Point; the freshwater ponds at this site were created to provide foraging habitat for this species. Milagra Ridge has suitable aquatic, adjacent upland, and dispersal habitats for the snake and Sweeney Ridge/Cattle Hill may serve as dispersal habitat for the snake. There is a mapped occurrence of the San Francisco garter snake at Denniston Creek in the El Granada area of the Rancho Corral de Tierra, near an existing trail (URS Corporation 2010, Figure 11). In addition, suitable aquatic habitat and adjacent upland dispersal habitat would be crossed by trails at Rancho Corral de Tierra (URS Corporation 2010, Figure 11).

It is important to note that the primary food source of the San Francisco garter snake is the federally threatened California red-legged frog (discussed above). Therefore, described impacts on the frog could also affect the San Francisco garter snake. The snake is normally associated with wetland areas and water bodies, but also uses upland habitat for basking and/or burrowing (USFWS 1985, 9).

Mori Point

Alternative A: No Action. Under current conditions, dogs are allowed on leash on all trails and on the beach within the GGNRA boundary. The San Francisco garter snake is present in areas that are open for visitor and dog use at this site, which has documented high visitor use, including moderate to high use by dog walkers. Some visitors are not complying with the leash law; off-leash violations totaled 146 from 2008 through 2011, with an additional 8 violations from 2012 through 2016 (tables 27a and 27b).

Educational signs and fences have been placed around the ponds and wetland habitat at Mori Point to prevent direct impacts on frogs and frog habitat; however, dogs have occasionally been observed in the ponds (Fong et al. 2010). The signs and fence also benefit the snake since the frog is its main food source. There is no documentation that dogs have either directly or indirectly affected the San Francisco garter snake at this site.

However, under alternative A, the behavior of the San Francisco garter snake could be directly affected by dogs through capture or digging if snakes are basking on warm surfaces, such as trails, or burrowing in upland areas. The snake could be indirectly affected if avoidance of preferred habitat occurs due to dog presence at the site or if changes to the California red-legged frog population occur. Therefore, impacts on the San Francisco garter snake as a result of alternative A would range from negligible to long-term, minor, and adverse. A few individuals of the species in a small, localized area could be affected by occasional disturbance from dogs but the reproductive success of individuals of the species would not be affected.

Under alternative A, no permit system exists for commercial dog walking. At Mori Point, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the snake.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Francisco garter snake at or in the vicinity of this site.

Park stewardship programs, the *Mori Point Restoration and Trail Plan* project, maintenance operations, illegal poaching by collectors, interim planning for new GGNRA lands in San Mateo County, and proposed plans for the Sharp Park golf course by the San Francisco Recreation and Park Department all have the potential to affect San Francisco garter snake habitat. Park stewardship programs and interim planning for new lands in San Mateo County are actively working to protect and enhance San Francisco garter snake habitat in cooperation with the USFWS as part of the recovery plan. Specifically, the *Mori Point Restoration and Trail Plan* project protected and enhanced habitat for the federally and state-listed threatened San Francisco garter snake at Mori Point by guiding visitor use away from restoration areas (NPS 2010e, 1, GGNPC 2016, 1).

Fragments of unique plant and animal habitats within Pacifica, known as Significant Natural Resource Areas (natural areas), have been preserved within the parks that are managed by the San Francisco Recreation and Park Department (SFRPD). The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years (SFPD 2011, 1). The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica and addresses dog walking (including on-leash dog walking and off-leash DPAs) in these areas (SFPD 2011, 261-262). The San Francisco garter snake was reported near Horse Stable Pond in Sharp Park in 2008 (SFPD 2011, 279), which is a natural area located adjacent to Mori Point and managed under the SNRAMP. Implementation of the Sharp Park restoration activities under the SNRAMP would have a short-term adverse effect on special-status species such as the San Francisco garter snake, although numerous mitigation measures would be employed to reduce adverse impacts (SFPD 2011, 40). Sharp Park has an existing extensive wetland complex (known as Laguna Salada) located between the golf course and the earthen seawall separating it from the sand beach. Mitigation plans that are part of the Sharp Park restoration under the SNRAMP include creating, restoring, and enhancing California red-legged frog and San Francisco garter snake habitat at the Laguna Salada wetland complex in the marsh area and associated uplands(SFPD 2011, 47; 97-98). This restoration could provide long-term protection at Laguna Salada for the California red-legged frog as well as the San Francisco garter snake. Therefore, project activities included in the SNRAMP will protect this listed species and provide long-term beneficial impacts to the San Francisco garter snake.

The negligible to long-term minor adverse impacts on the San Francisco garter snake from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from park stewardship programs, the SNRAMP, and the *Mori Point Restoration and*

Trail Plan project should reduce some of the adverse impacts on the San Francisco garter snake from alternative A. Therefore, cumulative impacts on the San Francisco garter snake under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Dogs have occasionally been observed in the ponds and snake behavior could be affected by dogs directly (through capture or digging) or indirectly (if preferred habitat is limited or changes in the California red-legged frog population occur)	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Mori Coastal Trail and on the beach within the GGNRA boundary, but dogs would not be allowed on the Pollywog Trail adjacent to the ponds, which provide snake habitat. Educational signs and fences have been placed around the ponds and wetland habitat at Mori Point. If dogs are physically restrained on leash at this site and deterred by fencing, they should not gain access to the ponds and should not affect the snake in wetland areas or in dispersal habitat. In addition, by reducing the number of trails available for dog walking compared to alternative A, there would be some benefits to the adjacent upland habitats used by San Francisco garter snakes and California red-legged frogs. Therefore, assuming compliance, alternative B would result in negligible impacts on the snake; there would be no measurable or perceptible changes to the snake or its habitat.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on the snake.

Cumulative Impacts. The negligible impacts on the San Francisco garter snake from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from park stewardship programs, the SNRAMP, and the *Mori Point Restoration and Trail Plan* project at this site combined with the negligible impacts on the San Francisco garter snake from alternative B would result in beneficial cumulative impacts.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would reduce direct impacts on snakes through capture or trampling; dogs would be prohibited on the trail adjacent to the ponds that provide snake habitat	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow dogs on leash on Old Mori Trail, the Mori Coastal Trail, and the beach within the GGNRA boundary, but dogs would not be allowed on the Pollywog Trail adjacent to the ponds. If dogs are physically restrained on leash at this site and not allowed on the trail adjacent to the ponds (which are also fenced), they should not gain access to the ponds and should not affect the snake in wetland areas or in dispersal habitat. In addition, by reducing the number of trails available for dog walking compared to alternative A, there would be some benefits to the adjacent upland habitats used by San Francisco garter snakes and California red-legged frogs.

Therefore, assuming compliance, alternative C would result in negligible impacts on the snake; no measurable or perceptible changes to the snake or its habitat would occur.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the snake.

Cumulative Impacts. The negligible impacts on the San Francisco garter snake from dogs at Mori Point under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from park stewardship programs, the SNRAMP, and the *Mori Point Restoration and Trail Plan* project at this site combined with the negligible impacts on the San Francisco garter snake from alternative C would result in beneficial cumulative impacts.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would reduce direct impacts on snakes through capture or trampling; dogs would be prohibited on the trail adjacent to the ponds that provide snake habitat	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would not allow dogs at the site. Therefore, this alternative would result in no impact on the San Francisco garter snake, assuming compliance.

Since dogs would not be allowed at Mori Point, there would be no impact from commercial dog walkers on the snake.

Cumulative Impacts. The lack of impacts on the San Francisco garter snake from dogs at Mori Point under alternative D was considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from park stewardship programs, the SNRAMP, and the *Mori Point Restoration and Trail Plan* project at this site combined with the lack of impacts on the San Francisco garter snake from alternative D would result in beneficial cumulative impacts.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Mori Coastal Trail, Old Mori Trail, the Pollywog Trail (adjacent to the ponds), and the section of beach within the GGNRA boundary. If dogs are physically restrained on leash at this site, they should not gain access to the ponds and should not affect the snake in wetland areas or in dispersal habitat. In addition, by reducing the number of trails available for dog walking compared to alternative A, there would be some benefits to the adjacent upland habitats used by San Francisco garter snakes and California red-legged frogs. Therefore, assuming compliance, alternative E would result in negligible impacts on the snake; no measurable or perceptible changes to the snake or its habitat would occur.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the snake.

Cumulative Impacts. The negligible impacts on the San Francisco garter snake from dogs at Mori Point under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from park stewardship programs, the SNRAMP, and the *Mori Point Restoration and Trail Plan* project at this site combined with the negligible impacts on the San Francisco garter snake from alternative E would result in beneficial cumulative impacts.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would reduce direct impacts on snakes through capture or trampling, although on-leash dogs would be allowed on the trail adjacent to some of the ponds (Pollywog Trail)	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on Old Mori Trail and the Pollywog Trail (which are adjacent to the freshwater ponds that prohibit dogs), the Mori Coastal Trail, the Mori Headlands Trail, and the portion of beach owned by the NPS. If dogs are physically restrained on leash at this site, they should not gain access to the fenced ponds and should not affect the snake in wetland areas or in dispersal habitat. In addition, reducing the number of trails available for dog walking compared to alternative A, there would be some benefits to the adjacent upland habitats used by San Francisco garter snakes and California red-legged frogs. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on the snake; no measurable or perceptible changes to the snake or its habitat would occur.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Mori Point is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the snake.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Francisco garter snake at or in the vicinity of this site.

Fragments of unique plant and animal habitats within Pacifica, known as Significant Natural Resource Areas (natural areas), have been preserved within the parks that are managed by the San Francisco Recreation and Park Department (SFRPD). The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years (SFPD 2011, 1). The scope of the SNRAMP analysis includes a natural area managed by the SFRPD in Pacifica and addresses dog walking (including on-leash dog walking and off-leash DPAs) in these areas (SFPD 2011, 261-262). The San Francisco garter snake was reported near the Horse Stable Pond in Sharp Park in 2008 (SFPD 2011, 279), which is a natural area located adjacent to Mori Point and managed under the SNRAMP. Implementation of the Sharp Park restoration activities under the SNRAMP would have a short-term adverse effect on special-status species such as the San Francisco garter snake, although numerous mitigation measures would be employed to reduce adverse impacts (SFPD 2011, 40). Sharp Park has an existing extensive wetland complex (known as Laguna Salada) located between the golf course and the earthen seawall separating it from the sand beach. Mitigation plans that are part of the Sharp Park restoration under the SNRAMP include creating, restoring, and enhancing California red-legged frog and San Francisco garter snake habitat at the Laguna Salada wetland complex in the marsh area and associated uplands(SFPD 2011, 47; 97-98). This restoration could provide long-term protection at Laguna Salada for the California red-legged frog and the San Francisco garter snake. Therefore, project activities included in the SNRAMP will protect this listed species and provide long-term beneficial impacts to the San Francisco garter snake.

Park stewardship programs, the *Mori Point Restoration and Trail Plan* project, maintenance operations, illegal poaching by collectors, interim planning for new GGNRA lands in San Mateo County, and proposed plans for the Sharp Park golf course by the San Francisco Recreation and Park Department all have the potential to affect San Francisco garter snake habitat. Park stewardship programs and interim planning for new lands in San Mateo County are actively working to protect and enhance San Francisco garter snake habitat in cooperation with the USFWS as part of the recovery plan. Specifically, the *Mori Point Restoration and Trail Plan* project protected and enhanced habitat for the federally and state–listed threatened San Francisco garter snake at Mori Point by guiding visitor use away from restoration areas (NPS 2010e, 1, GGNPC 2016, 1). The Sharp Park Golf Course, located in Pacifica (adjacent to Mori Point), supports the San Francisco garter snake. Plans at the golf course range from restoration to entirely natural habitat, to minor modifications that would improve habitat connectivity for frogs and snakes.

The negligible impacts on the San Francisco garter snake from dogs at Mori Point under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from park stewardship programs, the SNRAMP, and the *Mori Point Restoration and Trail Plan* project at this site combined with the negligible impacts on the San Francisco garter snake from the preferred alternative would result in beneficial cumulative impacts.

MORI POINT PREFERRED ALTERNATIVE F CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would reduce direct impacts on snakes through capture or trampling, although on-leash dogs would be allowed on the trail adjacent to some of the ponds (Pollywog Trail)	Beneficial to no change, assuming compliance	Beneficial cumulative impacts

Milagra Ridge

Alternative A: No Action. Dogs are currently allowed on leash on all trails at Milagra Ridge. This site has documented low visitor use by bicyclists, walkers, and hikers, and high visitor use by dog walkers (table 10). There were 35 leash law violations from 2008 through 2011 and an additional 10 violations between 2012 and 2016 (tables 28a and 28b). There is no documentation that dogs have either directly or indirectly affected the San Francisco garter snake at this site.

However, under alternative A, the behavior of the San Francisco garter snake could be directly affected by dogs (through capture or digging) if snakes are basking on warm surfaces, such as trails, or burrowing in upland areas. The San Francisco garter snake could be indirectly affected if avoidance of preferred habitat occurs due to dog presence at the site or if changes in the California red-legged frog population occur. Therefore, impacts on the snake as a result of alternative A would range from negligible to long term, minor, and adverse. A few individuals of the species in a small, localized area could be affected by occasional disturbance from dogs but the reproductive success of individuals of the species would not be affected.

Under alternative A, no permit system exists for commercial dog walking. At Milagra Ridge, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the snake.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Francisco garter snake at or in the vicinity of this site.

As discussed under Mori Point, mitigation plans that are part of the Sharp Park (located near Milagra Ridge) restoration under the SNRAMP include creating, restoring, and enhancing California red-legged frog and San Francisco garter snake habitat at the Laguna Salada wetland complex in the marsh area and associated uplands (SFPD 2011, 47; 97-98). This restoration could provide long-term protection at Laguna Salada for the California red-legged frog and the San Francisco garter snake.

Park stewardship programs, maintenance operations, illegal poaching by collectors, and interim planning for new GGNRA lands in San Mateo County all have potential to affect San Francisco garter snake habitat. Park stewardship programs and interim planning for new lands in San Mateo County are actively working to protect and enhance San Francisco garter snake habitat in cooperation with the USFWS as part of the recovery plan.

The negligible to long-term minor adverse impacts on the San Francisco garter snake from dogs at Milagra Ridge under alternative A were considered together with the effects of the projects mentioned

above. The beneficial effects from park stewardship programs as well as the SNRAMP should reduce some of the adverse impacts on the San Francisco garter snake from alternative A. Therefore, cumulative impacts on the San Francisco garter snake under this alternative would be expected to be negligible.

MILAGRA RIDGE ALTERNATIVE A CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Snake behavior could be affected by off-leash dogs directly (through capture or digging) or indirectly (if changes in the California red-legged frog population occur)	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow dogs on leash on the fire road and the trails to the overlook and WW II bunker as well as on the Milagra Battery Trail. However, the trail to the top of the hill would not be available to dogs under this alternative. If dogs are physically restrained on leash, they should not gain access to the aquatic habitat or dispersal habitat used by snakes at this site. Therefore, assuming compliance, alternative B would result in negligible impacts on the snake; no measurable or perceptible changes to the snake or its habitat would occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is uncommon at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on the snake.

Cumulative Impacts. The negligible impacts on the San Francisco garter snake from dogs at Milagra Ridge under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from park stewardship programs, the SNRAMP, and other actions combined with the negligible impacts on the San Francisco garter snake from alternative B would result in negligible cumulative impacts.

MILAGRA RIDGE ALTERNATIVE B CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would reduce direct impacts on snakes through capture and trampling	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the

number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the snake.

Cumulative Impacts. Under alternative C, the cumulative impacts on the snake at this park site would be the same as those under alternative B: negligible.

MILAGRA RIDGE ALTERNATIVE C CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would reduce direct impacts on snakes through capture and trampling (due to mobility of species)	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would not allow dogs at the site. Therefore, this alternative would result in no impact on the San Francisco garter snake, assuming compliance.

Since dogs would not be allowed at Milagra Ridge, there would be no impact from commercial dog walkers on the snake.

Cumulative Impacts. The lack of impacts on the San Francisco garter snake from dogs at Milagra Ridge under alternative D was considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from park stewardship programs, the SNRAMP, and other actions combined with the lack of impacts on the San Francisco garter snake from alternative D would result in beneficial cumulative impacts.

MILAGRA RIDGE ALTERNATIVE D CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails as alternative B, with the addition of a trail to the top of the hill, and impacts would be the same, assuming compliance: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the snake.

Cumulative Impacts. Under alternative E, the cumulative impacts on the San Francisco garter snake at Milagra Ridge would be the same as those under alternative B: negligible.

MILAGRA RIDGE ALTERNATIVE E CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would reduce direct impacts on snakes through capture and trampling	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative E, allowing dogs on leash on the fire road, the trails to the overlook and WW II bunker, the Milagra Battery Trail, and the trail to the top of the hill. If dogs are physically restrained on leash at this site, they should not gain access to and should not affect the snake in aquatic areas or in dispersal habitat. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on the snake; no measurable or perceptible changes to the snake or its habitat would occur.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Milagra Ridge is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Milagra Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the snake.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Francisco garter snake at or in the vicinity of this site.

As discussed under Mori Point, mitigation plans that are part of the Sharp Park (located near Milagra Ridge) restoration under the SNRAMP include creating, restoring, and enhancing California red-legged frog and San Francisco garter snake habitat at the Laguna Salada wetland complex in the marsh area and associated uplands (SFPD 2011, 47; 97-98). This restoration could provide long-term protection at Laguna Salada for the California red-legged frog and the San Francisco garter snake.

Park stewardship programs, maintenance operations, illegal poaching by collectors, and interim planning for new GGNRA lands in San Mateo County all have the potential to affect San Francisco garter snake habitat. Park stewardship programs and interim planning for new lands in San Mateo County are actively working to protect and enhance San Francisco garter snake habitat in cooperation with the USFWS as part of the recovery plan.

The negligible impacts on the San Francisco garter snake from dogs at Milagra Ridge under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from park stewardship programs and the SNRAMP combined with the negligible impacts on the San Francisco garter snake from the preferred alternative would result in negligible cumulative impacts.

MILAGRA RIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would reduce direct impacts on snakes through capture and trampling	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Sweeney Ridge/Cattle Hill

Alternative A: No Action. Under current conditions, dogs are allowed on leash on all trails except the Notch Trail, where dog walking is not allowed. This site has documented low to moderate visitor use by dog walkers and low use by hikers and bicyclists. Off-leash dog walking has been observed along the trails of Sweeney Ridge; off-leash incidents totaled 115 from 2008 through 2011 with an additional 11 violations between 2012 and 2016 (tables 29a and 29b). Cattle Hill is currently not part of GGNRA, but unrestricted dog walking occurs at this site. There is no documentation that dogs have either directly or indirectly affected the San Francisco garter snake at this site.

However, under alternative A, the behavior of the San Francisco garter snake could be directly affected by dogs (through capture or digging) if snakes are basking on warm surfaces, such as trails, or burrowing in upland areas. The snake could be indirectly affected if avoidance of preferred habitat occurs due to dog presence at the site or if changes in the California red-legged frog population occur. Therefore, impacts on the San Francisco garter snake as a result of alternative A would range from negligible to long-term, minor, and adverse. A few individuals of the species in a small, localized area could be affected by occasional disturbance from dogs but the reproductive success of individuals of the species would not be affected.

Under alternative A, no permit system exists for commercial dog walking. Commercial dog walking is uncommon at Sweeney Ridge and Cattle Hill; therefore, commercial dog walking would have negligible impacts on the snake.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge/Cattle Hill were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Francisco garter snake at or in the vicinity of these sites.

As discussed under Mori Point, mitigation plans that are part of the Sharp Park (located adjacent to Sweeney Ridge) restoration under the SNRAMP include creating, restoring, and enhancing California red-legged frog and San Francisco garter snake habitat at the Laguna Salada wetland complex in the marsh area and associated uplands (SFPD 2011, 47; 97-98). This restoration could provide long-term protection at Laguna Salada for the California red-legged frog and the San Francisco garter snake.

Park stewardship programs, maintenance operations, illegal poaching by collectors, and interim planning for new GGNRA lands in San Mateo County all have the potential to affect San Francisco garter snake habitat. Park stewardship programs and interim planning for new lands in San Mateo County are actively working to protect and enhance San Francisco garter snake habitat in cooperation with the USFWS as part of the recovery plan.

The negligible to long-term minor adverse impacts on the San Francisco garter snake from dogs at Sweeney Ridge/Cattle Hill under alternative A were considered together with the effects of the projects

mentioned above. The beneficial effects from park stewardship programs, the SNRAMP, and other actions should reduce some of the adverse impacts on the San Francisco garter snake from alternative A. Therefore, cumulative impacts on the San Francisco garter snake under this alternative would be expected to be negligible.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE A CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Snake behavior could be affected by off-leash dogs directly (through capture or digging) or indirectly (if changes in the California red-legged frog population occur)	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would not allow dogs at either site and would provide protection for a large area of relatively undisturbed contiguous habitat. Therefore, this alternative would result in no impact on the San Francisco garter snake, assuming compliance.

Since dogs would not be allowed at Sweeney Ridge/Cattle Hill, there would be no impact from commercial dog walkers on the snake.

Cumulative Impacts. The lack of impacts on the San Francisco garter snake from dogs at Sweeney Ridge/Cattle Hill under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from park stewardship programs, the SNRAMP, and other actions combined with the lack of impacts on the San Francisco garter snake from alternative B would result in beneficial cumulative impacts.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE B CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at both sites	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C no dog walking would be allowed at Sweeney Ridge. Assuming compliance, there would be no impact on the snake from dog walking at Sweeney Ridge. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to and including the Farallon View Trail. Although dogs would be allowed on the Cattle Hill trails, dogs would be physically restrained on leash and the leash policy would be enforced. If dogs are physically restrained on leash at this site, they should not gain access to dispersal habitat and should not affect the snake. Therefore, assuming compliance, alternative C would result in negligible impacts on the snake at Cattle Hill; no measurable or perceptible changes to individual snakes, the population, or designated critical habitat would occur.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since dog walking would not be allowed at Sweeney Ridge, commercial dog walking under alternative C would

have no impact on the snake. Since commercial dog walking is not common at Cattle Hill, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the snake at Cattle Hill.

Cumulative Impacts. The negligible impacts on the snake from dogs at Cattle Hill under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from park stewardship programs and the SNRAMP combined with the negligible impacts on the snake from alternative C would result in negligible cumulative impacts at Cattle Hill. At Sweeney Ridge, the lack of impacts combined with the beneficial effects from park stewardship programs would result in beneficial cumulative impacts.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE C CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact at Sweeney Ridge, assuming compliance	Dogs would be prohibited at Sweeney Ridge	Beneficial, assuming compliance	Beneficial cumulative impacts
Negligible impacts, assuming compliance, at Cattle Hill	At Cattle Hill, physically restraining dogs would reduce direct impacts on snakes through capture and trampling, although on-leash dogs would be allowed on numerous trails	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would not allow dogs at either site and would provide protection for a large area of relatively undisturbed contiguous habitat. Therefore, this alternative would result in no impact on the San Francisco garter snake, assuming compliance.

Since dogs would not be allowed at Sweeney Ridge/Cattle Hill, there would be no impact from commercial dog walkers on the snake.

Cumulative Impacts. Under alternative D, the cumulative impacts on the snake at this park site would be the same as those under alternative B: beneficial.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE D CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at both sites	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking at Sweeney Ridge along on the Sweeney Ridge Trail from the Portola Discovery site to the Notch Trail, on to the junction with Mori Ridge Trail, and on Sneath Lane. The Notch Trail would remain closed to dogs. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to and including the Farallon View Trail. The trails at Sweeney Ridge/Cattle Hill are long, with high quality habitat directly adjacent to the trails, and the on-leash dog trails under this alternative are a greater portion of the entire site compared to alternatives B, C, and D. Similar to alternative C, Cattle Hill trails would allow on-leash dog walking under this alternative, and

these trails generally receive low to moderate use. Physically restraining dogs on leash would protect habitat off trail, but on-leash dogs could still disturb snake behavior at this site due to the numerous trails open to dogs in high quality snake dispersal habitat. Therefore, assuming compliance, alternative E would result in negligible to long-term, minor, adverse impacts on the snake. A few individuals of the species in a small, localized area could be affected by occasional disturbance from dogs but the reproductive success of individuals of the species would not be affected.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Sweeney Ridge or Cattle Hill, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the snake.

Cumulative Impacts. The negligible to long-term, minor, adverse impacts on the San Francisco garter snake from dogs at Sweeney Ridge/Cattle Hill under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from park stewardship programs, the SNRAMP, and other actions combined with the negligible impacts on the San Francisco garter snake from alternative E would result in negligible cumulative impacts.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE E CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would reduce direct impacts on snakes through capture and trampling, but on-leash dogs would be allowed on numerous trails that support snake dispersal habitat and could occasionally affect the snake or its habitat	No change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. On-leash dog walking would be allowed at Sweeney Ridge on Sneath Lane and the Sweeney Ridge Trail between the Portola Discovery site and the Nike Missile Site. On-leash dog walking would be allowed at Cattle Hill on the Baquiano Trail from Fassler Avenue up to and including the Farallon View Trail. If dogs are physically restrained on leash at this site, they should not gain access to dispersal habitat and should not affect the snake. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on the snake at both sites; no measurable or perceptible changes to individual snakes, the population, or designated critical habitat would occur.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Sweeney Ridge/Cattle Hill is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Cattle Hill or Sweeney Ridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the snake at Sweeney Ridge/Cattle Hill.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge/Cattle Hill were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are

currently having, or have the potential to have effects on the San Francisco garter snake at or in the vicinity of this site.

As discussed under Mori Point, mitigation plans that are part of the Sharp Park (located adjacent to Sweeney Ridge) restoration under the SNRAMP include creating, restoring, and enhancing California red-legged frog and San Francisco garter snake habitat at the Laguna Salada wetland complex in the marsh area and associated uplands(SFPD 2011, 47; 97-98). This restoration could provide long-term protection at Laguna Salada for the California red-legged frog and the San Francisco garter snake.

Park stewardship programs, maintenance operations, illegal poaching by collectors, and interim planning for new GGNRA lands in San Mateo County all have the potential to affect San Francisco garter snake habitat. Park stewardship programs and interim planning for new lands in San Mateo County are actively working to protect and enhance San Francisco garter snake habitat in cooperation with the USFWS as part of the recovery plan.

The negligible impacts on the snake from dogs at Sweeney Ridge and Cattle Hill under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from park stewardship programs, the SNRAMP, and other actions combined with the negligible impacts from dogs at Sweeney Ridge/Cattle Hill under the preferred alternative would result in negligible cumulative impacts.

SWEENEY RIDGE/CATTLE HILL PREFERRED ALTERNATIVE F CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would reduce direct impacts on snakes through capture and trampling, although on-leash dogs would be allowed on numerous trails	Beneficial, assuming compliance	Negligible cumulative impacts

Rancho Corral de Tierra

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed at Rancho Corral de Tierra. Staff regularly working at Rancho characterize use by dog walkers as moderate overall with moderate to high use in the Montara area; compliance with the leash law is generally low. Because Rancho Corral de Tierra was transferred to the NPS in December 2011, law enforcement data and statistics are not available for this site. At Rancho Corral de Tierra, there is a mapped occurrence of the San Francisco garter snake at Denniston Creek in the El Granada area near an existing trail (URS Corporation 2010, Figure 11). In addition, suitable aquatic habitat and adjacent upland dispersal habitat exists throughout the site, and is crossed by trails at the site (URS Corporation 2010, Figure 11).

As noted above, compliance with the leash law is low at Rancho Corral de Tierra and NPS rangers have observed off-leash dogs running in areas with potentially sensitive habitat. Under alternative A, the San Francisco garter snake could be directly affected by dogs through capture or digging if snakes are basking on warm surfaces such as trails, or burrowing in upland areas. The snake could be indirectly affected if avoidance of preferred habitat occurs due to dog presence at the site or if there are changes to the California red-legged frog population. Therefore, impacts on the San Francisco garter snake as a result of alternative A would range from negligible to long-term, minor, and adverse. A few individuals of the

species in a small localized area (Rancho Corral de Tierra) could be affected by occasional disturbance from dogs but the reproductive success of individuals of the species would not be affected.

Under alternative A, no permit system exists for commercial dog walking. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the San Francisco garter snake.

Cumulative Impacts. Projects and actions in and near Rancho Corral de Tierra were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Francisco garter snake at or in the vicinity of this site. Since the Rancho Corral de Tierra site has been transferred to the NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking.

Additional actions have had, are currently having, or have the potential to have adverse impacts on wildlife and wildlife habitat at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involved constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica and Montara (County of San Mateo 2016d, 1). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

Since the Rancho Corral de Tierra site has been transferred to the NPS, general maintenance and protection of the site and associated natural resources have been occurring. Specifically, park stewardship programs and interim planning for the new lands in San Mateo County are actively working to protect and enhance San Francisco garter snake habitat in cooperation with the USFWS as part of the recovery plan. The *Mori Point Restoration and Trail Plan* project will protect and enhance habitat for the federally and state-listed threatened San Francisco garter snake at Mori Point (located near Rancho Corral de Tierra) by guiding visitor use away from restoration areas. Additionally, maintenance operations, illegal poaching by collectors, interim planning for new GGNRA lands in San Mateo County, and proposed plans for the Sharp Park golf course by the San Francisco Recreation and Park Department all have the potential to affect San Francisco garter snake habitat.

The negligible to long-term minor adverse impacts on the San Francisco garter snake from dogs at Rancho Corral de Tierra under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from park stewardship programs and the *Mori Point Restoration and Trail Plan* project should reduce some of the adverse impacts on the San Francisco garter snake from alternative A. Therefore, cumulative impacts on the San Francisco garter snake under this alternative would be expected to be negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE A CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Snakes could be affected by dogs directly (through capture or digging) or indirectly (if preferred habitat is limited or changes in the California red-legged frog population occur)	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on some trails in the Montara and El Granada areas of Rancho, which were identified by the local dog walking group as key areas for this use. There is a mapped occurrence of the San Francisco garter snake at Denniston Creek in the El Granada area near a trail that would allow on leash dog walking (URS Corporation 2010, Figure 11). In addition, suitable aquatic habitat and adjacent upland dispersal habitat would be crossed by the trails that would allow on-leash dog walking in Montara and El Granada at Rancho Corral de Tierra (URS Corporation 2010, Figure 11). However, if dogs are physically restrained on leash at this site, they should not gain access to the creek and should not affect the snake in aquatic areas or in dispersal habitat. Therefore, assuming compliance, alternative B would result in negligible impacts on the snake; there would be no measurable or perceptible changes to the snake or its habitat.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the San Francisco garter snake.

Cumulative Impacts. The negligible impact on the San Francisco garter snake from dogs at Rancho Corral de Tierra under alternative B was considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from park stewardship programs and the *Mori Point Restoration and Trail Plan* project combined with the negligible impacts on the San Francisco garter snake from alternative B would result in negligible cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE B CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to snake habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed on the same trails as under alternative B. In addition, a VSCA is proposed under alternative C in the Montara area between Le Conte Street and Tamarind Street, in an open grassy area near the Farallone View School. The proposed VSCA is located in adjacent upland and dispersal habitat for the San Francisco garter snake (URS Corporation 2010, Figure 11). To encompass possible effects of the VSCA, impacts of alternative C on the snake would be long term and would range from negligible to minor and adverse. A few individuals of the species in a small, localized area (Rancho Corral de Tierra) could be occasionally affected by disturbance from dogs within the VSCA but reproductive success of individuals of the species would not be affected.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the San Francisco garter snake.

Cumulative Impacts. The negligible to long-term minor adverse impacts on the San Francisco garter snake from dogs at Rancho Corral de Tierra under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from park stewardship programs and the *Mori Point Restoration and Trail Plan* project combined with the negligible to long-

term minor adverse impacts on the San Francisco garter snake from alternative C would result in negligible cumulative impacts at Rancho Corral de Tierra.

RANCHO CORRAL DE TIERRA ALTERNATIVE C CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Physically restraining dogs on leash would prevent dog access to snake habitat, but VSCA is located within adjacent upland dispersal habitat	No change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed only in the Montara area on two trails: Old San Pedro Mountain Road and the Farallon Cutoff. Dogs would be prohibited in other areas of the site, including the entire El Granada area. If dogs are physically restrained on leash at Montara on two existing trails, they should not gain access to snake habitat. Therefore, assuming compliance, alternative D would result in negligible impacts on the San Francisco garter snake; no measurable or perceptible changes to the snake would occur.

Since no commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D, no impact on the San Francisco garter snake from commercial or permitted dog walking would occur.

Cumulative Impacts. Under alternative D, the cumulative impacts on the San Francisco garter snake would be the same as those under alternative B: negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE D CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Limiting dog walking to on-leash dog walking on two trails in the Montara area would prevent dog access to snake habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same: range from negligible to long-term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the San Francisco garter snake.

Cumulative Impacts. The negligible to long-term minor adverse impacts on the San Francisco garter snake from dogs at Rancho Corral de Tierra under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from park stewardship programs, the *Mori Point Restoration and Trail Plan* project, and other actions combined with the

negligible to long-term, minor adverse impacts on the San Francisco garter snake from alternative E would result in negligible cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE E CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Physically restraining dogs on leash would prevent dog access to snake habitat, but VSCA is located within adjacent upland dispersal habitat	No change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on designated trails in three areas. Trails in Montara include Old San Pedro Mountain Road, LeConte Trail, Corona Pedro Trail, and Farallon Cutoff from the park boundary in the west to the intersection with Corona Pedro Trail. On-leash trails in the El Granada area include the Denniston Ridge Trail between the San Carlos Trail and its intersection with the Clipper Ridge Trail, the Clipper Ridge Trail, the Memorial Loop, the Almeria Trail, and the San Carlos Trail. In the Moss Beach area, on-leash dog walking would be allowed on the Vincente Ridge and Ranchette Trails. There is a mapped occurrence of the San Francisco garter snake at Denniston Creek in the El Granada Area near a trail that would allow on leash dog walking (URS Corporation 2010, Figure 11). In addition, suitable aquatic habitat and adjacent upland dispersal habitat would be crossed by the trails where on-leash dog walking would be allowed in both areas (Montara and El Granada) of Rancho Corral de Tierra under the preferred alternative (URS Corporation 2010, Figure 11). However, if dogs are physically restrained on leash at this site, they should not gain access to the creek and should not affect the snake in aquatic areas or in dispersal habitat. The preferred alternative would also establish a VSCA at Flat Top; however, the area is a former quarry site and is not comprised of suitable habitat for the San Francisco garter snake. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on the snake; no measurable or perceptible changes to the San Francisco garter snake or its habitat would occur.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Rancho Corral de Tierra is also not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs, with a limit of six. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on the San Francisco garter snake.

Cumulative Impacts. Projects and actions in and near Rancho Corral de Tierra were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Francisco garter snake at or in the vicinity of this site. Since the Rancho Corral de Tierra site has been transferred to the NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking.

Additional actions have had, are currently having, or have the potential to have adverse impacts on wildlife and wildlife habitat at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involved constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica and Montara (County of San Mateo 2016d, 1). Generally, construction projects that affect this community

require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

Since the Rancho Corral de Tierra site has been transferred to the NPS, general maintenance and protection of the site and associated natural resources have been occurring. Specifically, park stewardship programs and interim planning for the new lands in San Mateo County are actively working to protect and enhance San Francisco garter snake habitat in cooperation with the USFWS as part of the recovery plan. Also, the *Mori Point Restoration and Trail Plan* project protected and enhanced habitat for the federally and state-listed threatened San Francisco garter snake at Mori Point (located near Rancho Corral de Tierra) by guiding visitor use away from restoration areas. Additionally, maintenance operations, illegal poaching by collectors, interim planning for new GGNRA lands in San Mateo County, and proposed plans for the Sharp Park golf course by the San Francisco Recreation and Park Department all have the potential to affect San Francisco garter snake habitat.

The negligible impacts on the San Francisco garter snake from dogs at Rancho Corral de Tierra under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from park stewardship programs and the *Mori Point Restoration and Trail Plan* project combined with the negligible impacts on the San Francisco garter snake from the preferred alternative would result in negligible cumulative impacts.

RANCHO CORRAL DE TIERRA PREFERRED ALTERNATIVE F CONCLUSION TABLE

San Francisco Garter Snake Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs on leash would prevent dog access to snake habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts

IMPACTS TO THE WESTERN SNOWY PLOVER (FEDERALLY THREATENED) BY SITE AND ALTERNATIVE

In GGNRA, the western snowy plover uses areas with wide, sandy, dune-backed beaches (or sections of beaches) for roosting and foraging during their nonbreeding season. There is no documentation of this species nesting in GGNRA, but they overwinter at the Ocean Beach SPPA and at the Crissy Field WPA. The *Recovery Plan for Pacific Coast Population of the Western Snowy Plover* indicates that monitoring and management of western snowy plover breeding, wintering, and migrating habitat in order to maximize survival and productivity and reduce disturbance to this species are important for this species' recovery (USFWS 2007a, 140–141).

The NPS monitors snowy plovers at Ocean Beach and Crissy Field through a monitoring program. Western snowy plover monitoring has been conducted at Ocean Beach using the same monitoring protocol since December 1994. This monitoring protocol was peer reviewed by an external panel through the NPS Inventory and Monitoring Program peer review process (Merkle et al. 2011, ii). The NPS has been monitoring shorebirds at Crissy Field WPA since 2000, and records of western snowy plover pre-date the focused monitoring program there, which began in 2004 (NPS 2008a, 1). The western snowy plover monitoring protocol at Crissy Field was peer reviewed by an external panel through the NPS Inventory and Monitoring Program peer review process. Monitoring under this protocol started in 2006 using the same methods used at Ocean Beach.

The primary objectives of the snowy plover monitoring program are to determine trends in population size and spatial distribution of snowy plovers at the Crissy Field WPA and the Ocean Beach SPPA (Merkle et al. 2011). However, the monitoring program also has management objectives to reduce human-caused disturbance to wintering plovers. In support of these objectives, data on the number and distribution of people and dogs, compliance rates with seasonal restrictions requiring pets to be on leash, and instances of dogs chasing snowy plovers and shorebirds is collected at Ocean Beach and Crissy Field. Because the monitoring program is designed to census snowy plovers and determine where they are on the beach, there are data limitations and limits to analyses of these surveys that may result in under-estimating rates of dogs disturbing western snowy plovers. One limitation of the survey is that low numbers of observational hours were used to draw conclusions. Also, using encounter rates (number of dogs encountered per hour) to measure the rate of disturbance may be unsuitable because it is a challenge to obtain encounter rates from observations made along a transect moving in one direction. The low numbers of observational hours and the use of encounter rates in western snowy plover monitoring may underestimate instances of dogs disturbing western snowy plovers. Also, using median or average values to describe disturbance rates may not be useful in assessing disturbance at the sites. For example, an average masks the fact that some observations include no disturbances and other observations show a high number of disturbances (Hatch et al. 2007a, 10). Because of the sensitive nature of western snowy plovers, even small numbers of disturbances can greatly affect this shorebird and this fact may be further obscured by averaging the data.

At GGNRA, disturbances to snowy plovers have been observed and documented by park staff. For example, multiple observations where dogs have flushed or chased shorebirds or snowy plovers at Ocean Beach and Crissy Field have been documented in NPS monitoring reports by the Park Natural Resources Division (NPS 2008a; Hatch et al. 2007a, 12; Hatch et al. 2007b, 4-6; Hatch et al. 2008, 2-4). Park law enforcement staff have recorded snowy plover disturbances from dogs, in violation of park regulations established to protect the plover. Two park regulations are applicable to snowy plovers: 36 CFR 2.2 and 36 CFR 7.97. Specifically, 36 CFR 2.2 covers the protection of wildlife, including western snowy plovers. Wildlife disturbance is described in 36 CFR 2.2 (a) (2) and the following are prohibited: feeding, touching, teasing, frightening or intentional disturbing of wildlife nesting, breeding or other activities. In addition, 36 CFR 7.97(d) describes the seasonal dog walking restrictions for western snowy plovers in the Ocean Beach SPPA and the Crissy Field WPA.

The threatened status of the snowy plover affords it protection from harassment, defined under the ESA as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." The USFWS notes:

> Dogs on beaches can pose a serious threat to snowy plovers during both the breeding and nonbreeding seasons. Unleashed pets, primarily dogs, sometimes chase snowy plovers and destroy nests. Repeated disturbances by dogs can interrupt brooding, incubating, and foraging behavior of adult plovers and cause chicks to become separated from their parents (USFWS 2007a, 63).

The USFWS further states that dog disturbance at wintering and staging sites may adversely affect individual survivorship and fecundity, thereby affecting the species at a population level (USFWS 2007a, 65). Even though western snowy plovers do not nest at GGNRA, general impacts on western snowy plovers from dogs at GGNRA sites include chasing roosting or feeding shorebirds, which causes shorebirds to expend energy, resulting in disturbance or harassment. Frequent disturbance of this type can affect fat reserves needed for migration and breeding. This type of disturbance could result in loss of preferred habitat as well as energy loss by migrating and wintering shorebirds, potentially reducing their

chances of survival along migratory routes and reducing fitness for successful reproduction. The paragraphs that follow describe impacts as a result of the alternatives at Crissy Field and Ocean Beach.

As stated previously, beach nesting bird species are presumed to be the most sensitive species to disturbance. Several of these species, particularly coastal plovers in the genus *Charadrius*, are endangered or threatened (Lafferty 2001b, 315) and are very likely to leave an area altogether if disturbed (Kirby et al. 1993, 56-57). In a study conducted by Lafferty (2001b), western snowy plovers and activities that might disturb them were observed at a beach near Santa Barbara, California. Humans, dogs, crows, and other birds were the main sources of disturbance on the public beach (Lafferty 2001b, 315). However, this study showed that there was clear evidence of a disproportionate effect of dogs on plovers and some evidence that plover feeding was affected by activity on the beach (Lafferty 2001b, 322). Results of this study also showed that plovers were more likely to fly from dogs, horses, and crows than from humans and other shorebirds (Lafferty 2001b, 315).

Lafferty et al. (2006) presents results from a second study on the western snowy plover. This study was conducted at a public beach (Sands Beach, Coal Oil Point Reserve) in Santa Barbara, California, in which a portion of the beach was roped off to protect western snowy plover nests (Lafferty et al. 2006, 2219). The barrier reduced disturbance rates to the western snowy plover by more than half, including disturbances by dogs. Recreational disturbances that remained after the barrier was in place were mostly by humans (92 percent), followed by dogs (8 percent); most of the disturbances by dogs were caused by unleashed dogs (64 percent) (Lafferty et al. 2006, 2222). Protection from humans and off-leash dogs resulted in successful nesting and fledging of western snowy plovers (Lafferty et al. 2006, 2217). Western snowy plovers that were outside the protected area in the morning moved inside the protected area as people began using the beach (Lafferty et al. 2006, 2217). These results demonstrate how recreational disturbance can influence habitat use by shorebirds, including plovers, and that protecting quality habitat may have large benefits to wildlife and small impacts to recreation (Lafferty et al. 2006, 2217). Although disturbances are generally nonlethal and temporary, the cumulative effects of disturbance may be significant, particularly to sensitive species such as the western snowy plover (Lafferty et al. 2006, 2217).

Crissy Field (and the Crissy Field WPA)

Common to All Alternatives. Impacts from dogs as a result of the two different definitions of the Crissy Field WPA (the 36 CFR 7.97(d) definition for alternative A, approximately 700 feet east of the former Coast Guard Pier) and the definition for alternatives B–F (Warming Hut to approximately 900 feet east of the former Coast Guard Pier) would be the same for all alternatives. Even though the WPA would be expanded for alternatives B–F, this change would not influence the overall impacts analysis at this site because it would neither increase nor decrease the impacts at Crissy Field, described in the paragraphs that follow. Further explanation of these definitions can be found in the “Current Regulations and Policies” section of chapter 2.

Alternative A: No Action. Currently, dogs are allowed under voice control at Crissy Airfield, along the promenade, and at Central and East Beaches. Dogs are allowed on leash in the West Bluff Picnic Area and parking lot. Dogs are allowed in the WPA under voice control except during the seasonal leash restriction from July 1 through May 15 (to protect the western snowy plover). Crissy Field is a low to high use area for dog walking. Compliance with the current dog walking regulation is low at Crissy Field. Of the 510 incidents reported from 2008 through 2011, 283 incidents were for having dogs off leash within the Crissy Field WPA when the seasonal leash restriction was in effect (table 20a). Other common incidents include violation of a closed area (58 incidents), having dogs off leash (65 incidents), and possession of a pet in a closed area (15). An additional 98 incidents were reported from 2012 through 2016 (table 20b). Other violations were issued for having pets in Crissy Field Lagoon, which is closed to both humans and pets. In written incident reports, NPS staff have documented detailed disturbances of

western snowy plovers by dogs. These incident reports document violations of both 36 CFR 2.2 (protection of wildlife) and 36 CFR 7.97(d)(i) (dog walking restrictions at the Crissy Field WPA).

As stated previously, the primary objectives of the snowy plover monitoring program are to determine trends in population size and spatial distribution of plovers at the WPA. Also included are management objectives to reduce human-caused disturbance to wintering plovers (Merkle et al. 2011). Although the objectives of these surveys include reducing disturbance to western snowy plovers, there are data limitations and limits to analyses of these surveys that may result in underestimating these disturbances. Monitoring data at the site have demonstrated that disturbance of western snowy plovers due to off-leash dogs has increased in the Crissy Field WPA following the *U.S. v. Barley* decision (NPS 2006b; NPS 2008a, 2). Dogs have specifically been documented as chasing western snowy plovers at the Crissy Field WPA. In June through July 2006, there were two recorded instances of dogs chasing birds within the Crissy Field WPA (Hatch et al. 2007a, 14) and during the September 2006 through April 2007 surveys, there were three observations of dogs chasing shorebirds within the Crissy Field WPA (Hatch et al. 2007b, 5). There were no observations of dogs chasing shorebirds or plovers during the July 2007 through February 2008 surveys within the Crissy Field WPA (Hatch et al. 2008, 3). In addition, western snowy plovers infrequently use the habitat at Central Beach (including the tidal inlet from Crissy Marsh), where there are no leash restrictions, although this area is not as wide and the beach characteristics may not provide the same quality of habitat as the WPA.

Studies that were previously discussed have shown that dogs may disproportionately affect plovers (Lafferty 2001b, 322) and may adversely affect plovers in many ways, including individual survivorship and fecundity (USFWS 2007a, 65), feeding and migration behavior (Kersten and Piersma 1987, 182, 185), as well as reducing energy reserves and causing movement to an alternative site (Davidson and Rothwell 1993, 97). These shorebirds may not adapt to the presence of people by habituation (Burger et al. 2004, 286). Therefore, alternative A would result in long-term moderate adverse impacts on the western snowy plover because dogs would continue to frequently disturb and/or harass the birds and potentially limit use of preferred habitat. Dogs could interrupt roosting or foraging, which causes plovers to expend energy; frequent disturbance of this type affects fat reserves needed for migration and breeding. Although this species does not nest in GGNRA, chronic disturbance during the nonbreeding season could indirectly affect breeding behavior. Therefore, impacts would result in measurable and/or consequential changes to individuals of a species through frequent disturbance, but the impact would remain relatively localized and therefore moderate.

Under alternative A, no permit system exists for commercial dog walking. However, commercial dog walking at Crissy Field occurs regularly. Commercial dog walking would continue to contribute to the long-term moderate adverse impacts on the western snowy plover. Commercial dog walkers with multiple dogs under voice control would impact the western snowy plover as a result of frequent disturbance or harassment of the birds by dogs.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the western snowy plover at or in the vicinity of this site.

Along the California coast, western snowy plovers have been extirpated from 33 of 53 nesting sites since 1970, and now number approximately 1,400 birds (USFWS 2007a). Although the western snowy plover does not nest at the Crissy Field WPA, this area is still important for foraging, resting, and overwintering; chronic disturbance during the nonbreeding season could affect breeding behavior.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay; oil spills have historically affected plovers in GGNRA (USFWS 2007a). Western snowy plovers forage along the

shoreline and in beach wrack (seaweed and other natural wave-cast organic debris) at the high-tide line and are thus at risk of direct exposure to oil during spills (USFWS 2007a). However, because snowy plovers do not forage in the water, they are less susceptible to oiling than other species. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. As a result, the Natural Resource Damage Assessment process was initiated and a study estimated that of 52 snowy plovers (included 45 banded snowy plovers) potentially affected by the Cosco Busan oil spill, nearly all the snowy plovers survived the immediate effects from the spill and were still alive 2 years later. The Marine Mammal Center, which works with the Oiled Wildlife Care Network, captured a total of 951 birds affected by the spill and found a total of 884 dead as a result of this incident (MMC 2009).

Proposed restoration projects and plans, maintenance operations, and continued expansion of European beachgrass, have the potential to affect the western snowy plover and its habitat at Crissy Field. Additionally, the shorebird docent program and education and outreach efforts at the park will benefit the western snowy plover. An example of the regional projects and plans that will specifically benefit the western snowy plover is the Abbotts Lagoon Area Dune Restoration Plan, a project in the Point Reyes National Seashore that proposes to restore 300 acres of coastal dune habitat south of Abbotts Lagoon to benefit the western snowy plover. Habitat would be restored by removing highly invasive non-native plant species, which have greatly altered sand movement, dune structure, and habitat function for native plants and animals adapted to a coastal environment. Restoring dune habitat to a more natural condition and removing beachgrass would provide area-wide and regional benefits for the western snowy plover population at the park. The proposed Bolinas Lagoon Ecosystem Restoration Project should benefit the western snowy plover, as Bolinas Lagoon boasts a healthy, though fragile, ecosystem that provides habitat for the western snowy plover. Additionally, to protect the western snowy plover, the park closes the WPA to people and dogs during high use events, such as Fleet Week or the America's Cup yacht races, and the park does not permit special events in the WPA.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Crissy Field occurs regularly. Therefore, the interim compendium amendment could have a beneficial effect on western snowy plover and its habitat by limiting the number of dogs commercial dog walkers could have at the site at one time. This permitting could reduce disturbance and harassment of the plovers by dogs and limiting the use of preferred habitat.

The long-term moderate adverse impacts on the western snowy plover from dogs at Crissy Field under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects and the interim permitting program should reduce some of the adverse impacts on the western snowy plover from alternative A; however, impacts resulting from the past oil spill, maintenance operations, and continued expansion of European beachgrass would adversely affect the western snowy plover. When combined, these beneficial and adverse effects may balance out. Therefore, the cumulative analysis for the western snowy plover will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the western snowy plover under this alternative would be expected to be long term, moderate, and adverse.

CRISSY FIELD ALTERNATIVE A CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	The seasonal leash restriction is frequently violated in the WPA; dogs would continue to disturb and/or harass the birds and potentially limit their use of preferred habitat and interrupt roosting or foraging behavior, which causes birds to expend energy; frequent disturbance of this type affects fat reserves needed for migration and breeding	N/A	Long-term moderate adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the promenade, Airfield, East and Central beaches, paths leading to Central Beach, trails and grassy areas near East Beach, around the former Coast Guard Station, and on the Mason Street Bike Path. Dogs would be prohibited from the WPA and the tidal marsh. Although western snowy plovers infrequently use the habitat at Central Beach, enforcing or requiring leash laws have been suggested to reduce impacts to wildlife as a result of domestic dogs (Burger et al. 2004, 287; Lenth et al. 2008, 223; Miller et al. 2001, 131; Thomas et al. 2003, 71). Studies have shown that impacts on foraging shorebirds can be reduced when people maintain a minimum distance where shorebirds concentrate and leash laws are strictly enforced (Thomas et al. 2003, 71).

In addition to prohibiting unleashed dogs at Crissy Field, closing the WPA to dogs would protect the western snowy plover, and restricting pets on-leash on beaches will benefit the entire shorebird guild (Lafferty 2001b, 324). Under alternative B, the use of preferred habitat in the WPA by the plover would be protected.

Alternative B would result in the protection of western snowy plover habitat and individuals of the species by closing the WPA site to dogs and physically restraining dogs on leash on other beaches, which would improve habitat quality and reduce disturbance to western snowy plovers. Assuming compliance with proposed regulations, alternative B would result in negligible impacts on the western snowy plover. This alternative would provide consistency with the *Recovery Plan for the Western Snowy Plover* (USFWS 2007a); western snowy plover habitat and individuals of the species would be protected by closing the WPA site to dogs and physically restraining dogs on other beaches. The use of preferred habitat in the WPA by the plover would be protected.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Even though the percentage of commercial dog walkers is considered high at Crissy Field, dogs walked by commercial dog walkers would add only negligible impacts on the western snowy plover since the western snowy plover habitat and individuals of the species would be protected by closing the WPA site to dogs and physically restraining dogs in other areas.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the western snowy plover at or in the vicinity of this site.

Along the California coast, western snowy plovers have been extirpated from 33 of 53 nesting sites since 1970, and now number approximately 1,400 birds (USFWS 2007a). Although the western snowy plover does not nest at the Crissy Field WPA, this area is still important for foraging, resting, and overwintering; chronic disturbance during the nonbreeding season could affect breeding behavior.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay; oil spills have historically affected plovers in GGNRA (USFWS 2007a). Western snowy plovers forage along the shoreline and in beach wrack (seaweed and other natural wave-cast organic debris) at the high-tide line and are thus at risk of direct exposure to oil during spills (USFWS 2007a). However, because snowy plovers do not forage in the water, they are less susceptible to oiling than other species. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. As a result, the Natural Resource Damage Assessment process was initiated and a study estimated that of 52 snowy plovers (included 45 banded snowy plovers) potentially affected by the Cosco Busan oil spill, nearly all the snowy plovers survived the immediate effects from the spill and were still alive 2 years later. The Marine Mammal Center, which works with the Oiled Wildlife Care Network, captured a total of 951 birds affected by the spill and found a total of 884 dead as a result of this incident (MMC 2009).

Proposed restoration projects and plans, maintenance operations, and continued expansion of European beachgrass, have the potential to affect the western snowy plover and its habitat at Crissy Field. Additionally, the shorebird docent program and education and outreach efforts at the park will benefit the western snowy plover. An example of the regional projects and plans that will specifically benefit the western snowy plover is the Abbotts Lagoon Area Dune Restoration Plan, a project in the Point Reyes National Seashore that proposes to restore 300 acres of coastal dune habitat south of Abbotts Lagoon to benefit the western snowy plover. Habitat would be restored by removing highly invasive non-native plant species, which have greatly altered sand movement, dune structure, and habitat function for native plants and animals adapted to a coastal environment. Restoring dune habitat to a more natural condition and removing beachgrass would provide area-wide and regional benefits for the western snowy plover population at the park. The proposed Bolinas Lagoon Ecosystem Restoration Project should benefit the western snowy plover, as Bolinas Lagoon boasts a healthy, though fragile, ecosystem that provides habitat for the western snowy plover. Additionally, to protect the western snowy plover, the park closes the WPA to people and dogs during high use events, such as Fleet Week or the America's Cup yacht races, and the park does not permit special events in the WPA.

The negligible impacts on the western snowy plover from dogs at Crissy Field under alternative B were considered together with the effects of the projects mentioned above. When combined, the beneficial effects from the restoration projects and the adverse impacts resulting from the past oil spill, maintenance operations, and continued expansion of European beachgrass may balance out. Therefore, the cumulative analysis for the western snowy plover will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the western snowy plover under this alternative would be expected to be negligible.

CRISSY FIELD ALTERNATIVE B CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Western snowy plover habitat and individuals would be protected by closing the WPA site to dogs and physically restraining dogs on leash in other areas; use of preferred habitat in the WPA by the plover would be protected; this alternative is consistent with the recovery plan for the western snowy plover	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have similar dog walking restrictions as alternative B, except dogs would not be allowed on East Beach and would be allowed under voice and sight control in VSCAs established on Crissy Airfield and Central Beach; dogs would not be allowed in the WPA or the Crissy Marsh. Western snowy plovers infrequently use the habitat at Central Beach (including the tidal inlet from Crissy Marsh) where the VSCA would be established, and the beach characteristics at this site may not provide the same quality of habitat as the WPA. However, off-leash dogs could disturb and/or harass the birds and interrupt roosting or foraging behavior. Therefore, in the beach VSCA, long-term minor adverse impacts on the western snowy plover would occur.

The long-term minor adverse impacts on the plover in the beach VSCA would occur in a relatively small area when compared to the site as a whole. Assuming compliance with proposed regulations, alternative C would result in overall negligible impacts on the western snowy plover because dogs would be prohibited in the WPA, which is preferred habitat. Additionally, the Central Beach VSCA (situated away from the WPA) is infrequently used by plovers and makes up only a portion of the entire Crissy Field site. Western snowy plover habitat and individuals of the species would be protected by closing the WPA site to dogs. The use of preferred habitat in the WPA by the plover would be protected. Alternative C is consistent with the *Recovery Plan for the Western Snowy Plover*.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Permits would be allowed at Crissy Field for private or commercial dog walkers to walk more than three dogs, with a maximum of six dogs. Impacts on the western snowy plover from permit holders with up to six dogs off leash would be expected to increase under this alternative since commercial dog walking is common at Crissy Field. Therefore**,** impacts on western snowy plover from commercial dog walkers would be greater than impacts from other dog walkers and would be long term, minor, and adverse.

Cumulative Impacts. The negligible impacts on the western snowy plover from dogs at Crissy Field under alternative C were considered together with the effects of the projects mentioned above in alternative B. When combined, the beneficial effects from the restoration projects and the adverse impacts resulting from the past oil spill, maintenance operations, and continued expansion of European beachgrass may balance out. Therefore, the cumulative analysis for the western snowy plover will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the western snowy plover under this alternative would be expected to be negligible.

CRISSY FIELD ALTERNATIVE C CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Western snowy plover habitat and individuals would be protected by closing the WPA site to dogs and physically restraining dogs on leash in other areas; use of preferred habitat in the WPA by the plover would be protected; this alternative is consistent with the recovery plan for the western snowy plover	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking along the promenade, the eastern and western sections of Crissy Airfield, the Mason Street Bike Path, trails and grassy areas near East Beach, around the former Coast Guard Station, and in picnic and parking areas, except the West Bluff picnic area would be closed to dogs. All fenced areas, including the tidal marsh, would remain closed to dogs, and the WPA and East and Central beaches would be closed under this alternative. Dogs would be allowed under voice and sight control in a VSCA on the western portion of Crissy Airfield. Assuming compliance, negligible impacts on the western snowy plover would occur as a result of this alternative. Western snowy plover habitat and individuals of the species would be protected by closing the WPA site to dogs and physically restraining dogs in most areas. In addition, the VSCA would not be located adjacent to the WPA. The use of preferred habitat in the WPA by the plover would be protected. The alternative is consistent with the *Recovery Plan for the Western Snowy Plover*.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on the western snowy plover.

Cumulative Impacts. The negligible impacts on the western snowy plover from dogs at Crissy Field under alternative D were considered together with the effects of the projects mentioned above in alternative B. When combined, the beneficial effects from the restoration projects and the adverse impacts resulting from the past oil spill, maintenance operations, and continued expansion of European beachgrass may balance out. Therefore, the cumulative analysis for the western snowy plover will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the western snowy plover under this alternative would be expected to be negligible.

CRISSY FIELD ALTERNATIVE D CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Western snowy plover habitat and individuals would be protected by closing the WPA site to dogs and physically restraining dogs on leash in most areas; the VSCA would not be located adjacent to the WPA; use of preferred habitat in the WPA by the plover would be protected; this alternative is consistent with the recovery plan for the western snowy plover	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking in the WPA, on the promenade, East Beach, paths to Central Beach, trails and grassy areas near East Beach, around the Old Coast Guard Station, and on the Mason Street Bike Path. Dogs would be allowed under voice and sight control in VSCAs established on Crissy Airfield and Central Beach. Crissy Marsh would remain closed to dogs. This alternative would provide protection for western snowy plovers when the leash law is followed. However, even though dogs would be on leash in the WPA, it is preferred habitat for the western snowy plover and dogs walked on leash still disturb birds (Lafferty 2001a, 1955). The USFWS has stated that "dogs on beaches can pose a serious threat to snowy plovers during both the breeding and nonbreeding season" (USFWS 2007a). Assuming compliance, alternative E would result in long-term minor adverse impacts on the western snowy plover because physically restraining dogs on leash in the WPA would reduce chasing, but even leashed dogs in the WPA could bark and/or lunge at feeding and roosting western snowy plovers, resulting in disturbance and/or harassment in a relatively small area; the reproductive success of individuals of the species would not be affected, but the use of preferred habitat in the WPA by the western snowy plover may be limited. Also, the Central Beach VSCA would be located adjacent to the WPA and this alternative is not consistent with the *Recovery Plan for the Western Snowy Plover*.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Permits would be allowed at Crissy Field to walk a maximum of six dogs. Since commercial dog walking is common at Crissy Field, impacts on the western snowy plover would be expected from this user group. Impacts on the western snowy plover from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on the western snowy plover from dogs at Crissy Field under alternative E were considered together with the effects of the projects mentioned above in alternative B. When combined, the beneficial effects from the restoration projects and the adverse impacts resulting from the past oil spill, maintenance operations, and continued expansion of European beachgrass may balance out. Therefore, the cumulative analysis for the western snowy plover will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the western snowy plover under this alternative would be expected to be long term, minor, and adverse.

CRISSY FIELD ALTERNATIVE E CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash in the WPA would reduce chasing, but even leashed dogs could bark and/or lunge at feeding and roosting western snowy plovers, causing disturbance and/or harassment in a relatively small area; the beach VSCA is located adjacent to the WPA; plovers' use of preferred habitat in the WPA may be limited; this alternative is not consistent with the recovery plan for the western snowy plover	Beneficial, assuming compliance	Long-term minor adverse cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking throughout Crissy Field, except dogs would not be allowed on East Beach, in the fenced areas, the picnic areas, or the western portion of the airfield. Dogs would be allowed under voice and sight control in VSCAs established on the central portion of Crissy Airfield and on Central Beach. Crissy Marsh would remain closed to dogs. Western snowy plovers infrequently use the habitat at Central Beach (including the tidal inlet from Crissy Marsh) where the VSCA would be established, and the beach characteristics at this site may not provide the same quality of habitat as the WPA. However, off-leash dogs could disturb and/or harass the birds and interrupt roosting or foraging behavior. Therefore, in the beach VSCA, long-term minor adverse impacts on the western snowy plover would occur.

Also, even though a leash makes it difficult for dogs to chase birds and reduces the probability and the number of disturbances to birds, dogs walked on leash still disturb birds (Lafferty 2001a, 1955). Enforcing or requiring leash laws have been suggested to reduce impacts of domestic dogs on wildlife (Burger et al. 2004, 287; Lenth et al. 2008, 223; Miller et al. 2001, 131; Thomas et al. 2003, 71). Specifically, impacts on foraging shorebirds can be reduced by having people maintain a minimum distance where shorebirds concentrate and where leash laws are strictly enforced (Thomas et al. 2003, 71). Therefore, prohibiting dogs in the WPA would provide protection to the western snowy plover under the preferred alternative. Restricting pets on beaches in order to protect snowy plovers will benefit the entire shorebird guild (Lafferty 2001b, 324). In a study conducted by Lafferty et al. (2006) at a public beach (Sands Beach, Coal Oil Point Reserve) in Santa Barbara, CA, protection from humans and off-leash dogs resulted in successful nesting and fledging of western snowy plovers (Lafferty et al. 2006, 2217). Under the preferred alternative, the use of preferred habitat in the WPA by the plover would be protected.

The preferred alternative would result in the protection of western snowy plover habitat and individuals of the species by closing the WPA site to dogs and physically restraining dogs on leash in most other areas, which would improve habitat quality and reduce disturbance to western snowy plovers. The long-term minor adverse impacts on the western snowy plover in the beach VSCA would occur in a relatively small area when compared to the site as a whole. Assuming compliance with proposed regulations, the preferred alternative would result in negligible impacts on the western snowy plover because dogs would be prohibited from the WPA. Additionally, the Central Beach VSCA (which is separated from the WPA by a fence) is infrequently used by plovers and makes up only a portion of the entire Crissy Field site. Western snowy plover habitat and individuals of the species would be protected by closing the WPA site

to dogs. The use of preferred habitat in the WPA by the plover would be protected. This alternative would provide consistency with the *Recovery Plan for the Western Snowy Plover* (USFWS 2007a).

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Permits would be allowed at Crissy Field to walk more than three dogs, with a maximum of six. However, the areas where a dog walker with more than three dogs can go are limited to the two VSCAs, the direct beach access trails connecting the VSCAs, the Promenade (from the parking lot to the eastern-most trail leading to Central Beach only), and the Mason Street Bike Path, thus limiting the potential impacts on coastal communities. Impacts on the western snowy plover from permit holders with up to six dogs off leash would be similar to impacts described above for the VSCA, since commercial dog walking is common at Crissy Field. Therefore**,** impacts on western snowy plover from commercial dog walkers would be long term, minor, and adverse.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the western snowy plover at or in the vicinity of this site.

Along the California coast, western snowy plovers have been extirpated from 33 of 53 nesting sites since 1970, and now number approximately 1,400 birds (USFWS 2007a). Although the western snowy plover does not nest at the Crissy Field WPA, this area is still important for foraging, resting, and overwintering; chronic disturbance during the nonbreeding season could affect breeding behavior.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay; oil spills have historically affected plovers in GGNRA (USFWS 2007a). Western snowy plovers forage along the shoreline and in beach wrack (seaweed and other natural wave-cast organic debris) at the high-tide line and are thus at risk of direct exposure to oil during spills (USFWS 2007a). However, because snowy plovers do not forage in the water, they are less susceptible to oiling than other species. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. As a result, the Natural Resource Damage Assessment process was initiated and a study estimated that of 52 snowy plovers (included 45 banded snowy plovers) potentially affected by the Cosco Busan oil spill, nearly all the snowy plovers survived the initial effects from the spill and were still alive 2 years later. The Marine Mammal Center, which works with the Oiled Wildlife Care Network, captured a total of 951 birds affected by the spill and found a total of 884 dead as a result of this incident (MMC 2009).

Proposed restoration projects and plans, maintenance operations, and continued expansion of European beachgrass have the potential to affect the western snowy plover and its habitat at Crissy Field. Additionally, the shorebird docent program and education and outreach efforts at the park will benefit the western snowy plover. An example of the regional projects and plans that will specifically benefit the western snowy plover is the *Abbotts Lagoon Area Dune Restoration Plan*, a project in the Point Reyes National Seashore that proposes to restore 300 acres of coastal dune habitat south of Abbotts Lagoon to benefit the western snowy plover. Habitat would be restored by removing highly invasive non-native plant species, which have greatly altered sand movement, dune structure, and habitat function for native plants and animals adapted to a coastal environment. Restoring dune habitat to a more natural condition and removing beachgrass would provide area-wide and regional benefits for the western snowy plover population at the park. Additionally, the proposed *Bolinas Lagoon Ecosystem Restoration Project* should benefit the western snowy plover, as Bolinas Lagoon boasts a healthy, though fragile, ecosystem that provides habitat for the western snowy plover.

The overall negligible impacts on the western snowy plover from dogs at Crissy Field under the preferred alternative were considered together with the effects of the projects mentioned above. When combined,

the beneficial effects from the restoration projects and the adverse impacts resulting from the past oil spill, maintenance operations, and continued expansion of European beachgrass may balance out. Therefore, the cumulative analysis for the western snowy plover will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the western snowy plover under this alternative would be expected to be negligible.

CRISSY FIELD PREFERRED ALTERNATIVE F CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Western snowy plover habitat and individuals would be protected by closing the WPA site to dogs and physically restraining dogs on leash in other areas; use of preferred habitat in the WPA by the plover would be protected; this alternative is consistent with the recovery plan for the western snowy plover	Beneficial, assuming compliance	Negligible cumulative impacts

Ocean Beach SPPA (Stairwell 21 South to Sloat Boulevard)

Alternative A: No Action. Under current conditions, the SPPA is open to dogs under voice control from May 15 through July 1, but seasonal leash restrictions require dogs to be on leash from July 1 through May 15. The Ocean Beach SPPA is a moderate use area for dog walking. This site has documented moderate to high visitor use and compliance with the current dog policies at Ocean Beach is considered poor. NPS staff have documented detailed disturbances to western snowy plovers as a result of dogs in written incident reports that violate both 36 CFR 2.2 (protection of wildlife) and 36 CFR 7.97(d)(ii) (dog walking restrictions at the Ocean Beach SPPA).

As described in the collected law enforcement data and through the plover monitoring program, the seasonal leash restrictions designed to protect western snowy plovers at Ocean Beach are frequently violated and disturbance of shorebirds (including western snowy plovers) by dogs and people has occurred (Hatch 1996; Hatch et al. 2007a, 2008; USFWS 2007a). During western snowy plover monitoring surveys conducted at Ocean Beach from December 1994 to May 1996, 362 dogs were observed chasing birds; 19 dogs were observed chasing at least 62 western snowy plovers; and roaming dogs inadvertently disturbed at least 100 additional western snowy plovers (Hatch 1996). During a long-term monitoring survey conducted from 1994 to 2006, 48 off-leash dogs were observed chasing western snowy plovers (Ward and Ablog 2006). Western snowy plover monitoring data have demonstrated that disturbance of western snowy plovers due to off-leash dogs increased in the SPPA immediately following the *U.S. v. Barley* decision (NPS 2006b; NPS 2008a, 2).

Studies that were previously described have shown that dogs may disproportionately affect plovers (Lafferty 2001b, 322) and may adversely affect plovers in many ways, including individual survivorship and fecundity (USFWS 2007a, 65), feeding and migration behavior (Kersten and Piersma 1987, 182, 185), as well as reducing energy reserves and causing movement to an alternative site (Davidson and Rothwell 1993, 97). These shorebirds may not adapt to the presence of people by habituation (Burger et al. 2004, 286). Therefore, alternative A would result in long-term moderate adverse impacts on the western snowy plover because dogs would continue to frequently disturb and/or harass the birds and potentially limit their use of preferred habitat. Dogs could interrupt roosting or foraging, which causes the birds to expend energy; frequent disturbance of this type affects fat reserves needed for migration and

breeding. Although this species does not nest in GGNRA, chronic disturbance during the nonbreeding season could indirectly affect breeding behavior. Therefore, impacts would result in measurable and/or consequential changes in individuals of a species through frequent disturbance, but the impact would remain relatively localized and therefore moderate.

Under alternative A, no permit system exists for commercial dog walking. At Ocean Beach, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the western snowy plover.

Cumulative Impacts. Projects and actions in and near the Ocean Beach SPPA were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the western snowy plover at or in the vicinity of this site.

Along the California coast, western snowy plovers have been extirpated from 33 of 53 nesting sites since 1970, and now number approximately 1,400 birds (USFWS 2007a). Although the western snowy plover does not nest at the Ocean Beach SPPA, this area is still important for foraging, resting, and overwintering; chronic disturbance during the nonbreeding season could affect breeding behavior.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay; oil spills have historically affected plovers in GGNRA (USFWS 2007a). Western snowy plovers forage along the shoreline and in beach wrack (seaweed and other natural wave-cast organic debris) at the high-tide line and are thus at risk of direct exposure to oil during spills (USFWS 2007a). However, because snowy plovers do not forage in the water, they are less susceptible to oiling than other species. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. As a result, the Natural Resource Damage Assessment process was initiated and a study estimated that of 52 snowy plovers (included 45 banded snowy plovers) potentially affected by the Cosco Busan oil spill, nearly all the snowy plovers survived the initial effects from the spill and were still alive 2 years later. The Marine Mammal Center, which works with the Oiled Wildlife Care Network, captured a total of 951 birds affected by the spill and found a total of 884 dead as a result of this incident (MMC 2009).

Proposed restoration projects and plans, maintenance operations, continued expansion of European beachgrass, and the *Ocean Beach Erosion Control Project* have the potential to affect the western snowy plover and its habitat at Ocean Beach. The *Ocean Beach Erosion Control Project* is developing long-term solutions to beach and bluff erosion problems at Ocean Beach along the Great Highway consistent with the enhancement of natural processes. An example of the regional projects and plans that will specifically benefit the western snowy plover is the *Abbotts Lagoon Area Dune Restoration Plan*, a project in the Point Reyes National Seashore that proposes to restore 300 acres of coastal dune habitat south of Abbotts Lagoon to benefit the western snowy plover. Habitat would be restored by removing highly invasive non-native plant species, which have greatly altered sand movement, dune structure, and habitat function for native plants and animals adapted to a coastal environment. Restoring dune habitat to a more natural condition and removing beachgrass would provide area-wide and regional benefits for the western snowy plover population at the park. Additionally, the proposed *Bolinas Lagoon Ecosystem Restoration Project* should benefit the western snowy plover, as Bolinas Lagoon boasts a healthy, though fragile, ecosystem that provides habitat for the western snowy plover. The *Ocean Beach Master Plan* includes plans to restore habitat at Ocean Beach including native dune restoration and beach nourishment, which may result in beneficial impacts on the Western snowy plover.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog

walking at Ocean Beach is uncommon. However, the interim compendium amendment could have a slight beneficial effect on western snowy plover and its habitat by limiting the number of dogs commercial dog walkers could have at the site at one time. This permitting could reduce disturbance and harassment of the plovers by dogs and limiting the use of preferred habitat.

The long-term moderate adverse impacts on the western snowy plover from dogs at the Ocean Beach SPPA under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects and the interim permitting program should reduce some of the adverse impacts on the western snowy plover from alternative A; however, impacts resulting from the past oil spill, maintenance operations, erosion control projects, and continued expansion of European beachgrass would adversely affect the western snowy plover. When combined, the beneficial and adverse effects from these actions may balance out. Therefore, the cumulative analysis for the western snowy plover will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the western snowy plover under this alternative would be expected to be long term, moderate, and adverse.

OCEAN BEACH SPPA ALTERNATIVE A CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	The seasonal leash restriction is frequently violated in the SPPA; dogs would continue to disturb and/or harass the birds and potentially limit their use of preferred habitat and interrupt roosting or foraging behavior, which causes birds to expend energy; frequent disturbance of this type affects fat reserves needed for migration and breeding	N/A	Long-term moderate adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the adjacent Ocean Beach Trail along Great Highway, but not on the beach in the SPPA. Because an approximately 2-mile length of beach (the SPPA, which is preferred habitat for the plover) would not be available to dogs, this alternative would provide protection of the western snowy plover. Alternative B would result in the protection of western snowy plover habitat and individuals of the species by closing the SPPA site to dogs and physically restraining dogs on leash in other areas, which would improve habitat quality and reduce disturbance to western snowy plovers. Also, the use of preferred habitat in the SPPA by the plover would be protected. Assuming compliance with proposed regulations, alternative B would result in no impact on the western snowy plover; western snowy plover habitat and individuals of the species would be protected by closing the SPPA site to dogs and physically restraining dogs on leash in other areas. Finally, this alternative would provide consistency with the *Recovery Plan for the Western Snowy Plover* (USFWS 2007a).

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. However, commercial dog walkers would have no impact on the western snowy plover since the SPPA site would be closed to dogs and dogs would be physically restrained on leash in other areas of the site.

Cumulative Impacts. Projects and actions in and near the Ocean Beach SPPA were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the western snowy plover at or in the vicinity of this site.

Along the California coast, western snowy plovers have been extirpated from 33 of 53 nesting sites since 1970, and now number approximately 1,400 birds (USFWS 2007a). Although the western snowy plover does not nest at the Ocean Beach SPPA, this area is still important for foraging, resting, and overwintering; chronic disturbance during the nonbreeding season could affect breeding behavior.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay; oil spills have historically affected plovers in GGNRA (USFWS 2007a). Western snowy plovers forage along the shoreline and in beach wrack (seaweed and other natural wave-cast organic debris) at the high-tide line and are thus at risk of direct exposure to oil during spills (USFWS 2007a). However, because snowy plovers do not forage in the water, they are less susceptible to oiling than other species. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. As a result, the Natural Resource Damage Assessment process was initiated and a study estimated that of 52 snowy plovers (included 45 banded snowy plovers) potentially affected by the Cosco Busan oil spill, nearly all the snowy plovers survived the initial effects from the spill and were still alive 2 years later. The Marine Mammal Center, which works with the Oiled Wildlife Care Network, captured a total of 951 birds affected by the spill and found a total of 884 dead as a result of this incident (MMC 2009).

Proposed restoration projects and plans, maintenance operations, continued expansion of European beachgrass, and the *Ocean Beach Erosion Control Project* have the potential to affect the western snowy plover and its habitat at Ocean Beach. The *Ocean Beach Erosion Control Project* is developing long-term solutions to beach and bluff erosion problems at Ocean Beach along the Great Highway consistent with the enhancement of natural processes. An example of the regional projects and plans that will specifically benefit the western snowy plover is the *Abbotts Lagoon Area Dune Restoration Plan*, a project in the Point Reyes National Seashore that proposes to restore 300 acres of coastal dune habitat south of Abbotts Lagoon to benefit the western snowy plover. Habitat would be restored by removing highly invasive non-native plant species, which have greatly altered sand movement, dune structure, and habitat function for native plants and animals adapted to a coastal environment. Restoring dune habitat to a more natural condition and removing beachgrass would provide area-wide and regional benefits for the western snowy plover population at the park. Additionally, the proposed *Bolinas Lagoon Ecosystem Restoration Project* should benefit the western snowy plover, as Bolinas Lagoon boasts a healthy, though fragile, ecosystem that provides habitat for the western snowy plover. The *Ocean Beach Master Plan* includes plans to restore habitat at Ocean Beach including native dune restoration and beach nourishment, which may result in beneficial impacts on the Western snowy plover.

The lack of impacts on the western snowy plover from dogs at the Ocean Beach SPPA under alternative B was considered together with the effects of the projects mentioned above. When combined, the beneficial effects from the restoration projects and the adverse impacts resulting from the past oil spill, maintenance operations, and continued expansion of European beachgrass may balance out. Therefore, the cumulative impacts on the western snowy plover would be expected to be negligible.

OCEAN BEACH SPPA ALTERNATIVE B CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Western snowy plover habitat and individuals would be protected by closing the SPPA site to dogs and physically restraining dogs on leash in other areas; use of preferred habitat in the SPPA by the plover would be protected; the alternative is consistent with the recovery plan for the western snowy plover	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts on the western snowy plover would be the same, assuming compliance: no impact.

Under alternative C, commercial dog walkers would have no impact on the western snowy plover since the SPPA site would be closed to dogs and dogs would be physically restrained in other areas of the site.

Cumulative Impacts. Under alternative C, the cumulative impacts on the western snowy plover at the Ocean Beach SPPA would be the same as those under alternative B: negligible.

OCEAN BEACH SPPA ALTERNATIVE C CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Western snowy plover habitat and individuals would be protected by closing the SPPA site to dogs and physically restraining dogs on leash in other areas; use of preferred habitat in the SPPA by the plover would be protected; the alternative is consistent with the recovery plan for the western snowy plover	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B, and impacts on the western snowy plover would be the same, assuming compliance: no impact.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on the western snowy plover.

Cumulative Impacts. Under alternative D, the cumulative impacts on the western snowy plover at the Ocean Beach SPPA would be the same as those under alternative B: negligible.

OCEAN BEACH SPPA ALTERNATIVE D CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Western snowy plover habitat and individuals would be protected by closing the SPPA site to dogs and physically restraining dogs on leash in other areas; use of preferred habitat in the SPPA by the plover would be protected; the alternative is consistent with the recovery plan for the western snowy plover	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the beach in the SPPA during all seasons, as well as on the Ocean Beach Trail along Great Highway. This alternative would provide protection for western snowy plovers when the leash law is followed. The current protections would be in place for western snowy plovers, but would be extended throughout the year to eliminate the current confusion with the seasonal leash restrictions. However, even though dogs would be on leash in the SPPA, it is preferred habitat for the western snowy plover and dogs walked on leash still disturb birds (Lafferty 2001a, 1955). The USFWS has stated that "dogs on beaches can pose a serious threat to snowy plovers during both the breeding and nonbreeding season" (USFWS 2007a). Assuming compliance, alternative E would result in long-term minor adverse impacts on the western snowy plover because physically restraining dogs on leash in the SPPA would reduce chasing, but even leashed dogs in could bark and/or lunge at feeding and roosting western snowy plovers, causing occasional disturbance and/or harassment in a relatively small area; the reproductive success of individuals of the species would not be affected, but the plovers' use of preferred habitat in the SPPA may be limited. This alternative is not consistent with the *Recovery Plan for Pacific Coast Population of the Western Snowy Plover* (USFWS 2007a).

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Ocean Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Ocean Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the western snowy plover.

Cumulative Impacts. The long-term minor adverse impacts on the western snowy plover from dogs at the Ocean Beach SPPA under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the restoration projects should reduce some of the adverse impacts on the western snowy plover from alternative E; however, impacts resulting from the past oil spill, maintenance operations, erosion control projects, and continued expansion of European beachgrass would adversely affect the western snowy plover. When combined, the beneficial and adverse effects from these actions may balance out. Therefore, the cumulative analysis for the western snowy plover will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the western snowy plover under this alternative would be expected to be long term, minor, and adverse.

OCEAN BEACH SPPA ALTERNATIVE E CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash in the SPPA would reduce chasing, but even leashed dogs could bark and/or lunge at feeding and roosting western snowy plovers, causing disturbance and/or harassment in a relatively small area; plovers' use of preferred habitat in SPPA may be limited; this alternative is not consistent with the recovery plan for the western snowy plover	Beneficial, assuming compliance	Long-term minor adverse cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative is the same as alternative B, prohibiting dogs on the beach in the SPPA, although dog walking on leash would be allowed on the Ocean Beach Trail adjacent to the Great Highway. Because an approximately 2-mile length of beach (the SPPA, which is preferred habitat for the plover) would not be available to dogs, this alternative would provide for protection of the western snowy plover from dogs and consistency with the *Recovery Plan for the Western Snowy Plover* (USFWS 2007a). Therefore, the preferred alternative would result in no impact on the western snowy plover because individual plovers and habitat would be protected by closing the SPPA site to dogs and physically restraining dogs on leash in other areas. The use of preferred habitat in the SPPA by the plover would be protected. To further support this conclusion, this alternative would prevent disturbance/harassment by dogs to western snowy plovers and would be consistent with the recovery plan.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Ocean Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Regardless, commercial dog walkers would have no impact on the western snowy plover since the SPPA site would be closed to dogs and dogs would be physically restrained on leash or in a VSCA in other areas of the site.

Cumulative Impacts. Projects and actions in and near the Ocean Beach SPPA were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the western snowy plover at or in the vicinity of this site.

Along the California coast, western snowy plovers have been extirpated from 33 of 53 nesting sites since 1970, and now number approximately 1,400 birds (USFWS 2007a). Although the western snowy plover does not nest at the Ocean Beach SPPA, this area is still important for foraging, resting, and overwintering; chronic disturbance during the nonbreeding season could affect breeding behavior.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay; oil spills have historically affected plovers in GGNRA (USFWS 2007a). Western snowy plovers forage along the shoreline and in beach wrack (seaweed and other natural wave-cast organic debris) at the high-tide line and are thus at risk of direct exposure to oil during spills (USFWS 2007a). However, because western snowy plovers do not forage in the water, they are less susceptible to oiling than other species. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996.

As a result, the Natural Resource Damage Assessment process was initiated and a study estimated that of 52 snowy plovers (included 45 banded snowy plovers) potentially affected by the Cosco Busan oil spill, nearly all the snowy plovers survived the initial effects from the spill and were still alive 2 years later. The Marine Mammal Center, which works with the Oiled Wildlife Care Network, captured a total of 951 birds affected by the spill and found a total of 884 dead as a result of this incident (MMC 2009).

Proposed restoration projects and plans, maintenance operations, continued expansion of European beachgrass, and the *Ocean Beach Erosion Control Project* have the potential to affect the western snowy plover and its habitat at Ocean Beach. The *Ocean Beach Erosion Control Project* is developing long-term solutions to beach and bluff erosion problems at Ocean Beach along the Great Highway consistent with the enhancement of natural processes. An example of the regional projects and plans that will specifically benefit the western snowy plover is the *Abbotts Lagoon Area Dune Restoration Plan*, a project in the Point Reyes National Seashore that proposes to restore 300 acres of coastal dune habitat south of Abbotts Lagoon to benefit the western snowy plover. Habitat would be restored by removing highly invasive non-native plant species, which have greatly altered sand movement, dune structure, and habitat function for native plants and animals adapted to a coastal environment. Restoring dune habitat to a more natural condition and removing beachgrass would provide area-wide and regional benefits for the western snowy plover population at the park. Additionally, the proposed *Bolinas Lagoon Ecosystem Restoration Project* should benefit the western snowy plover, as Bolinas Lagoon boasts a healthy, though fragile, ecosystem that provides habitat for the western snowy plover. The *Ocean Beach Master Plan* includes plans to restore habitat at Ocean Beach including native dune restoration and beach nourishment, which may result in beneficial impacts on the Western snowy plover.

The lack of impacts on the western snowy plover from dogs at the Ocean Beach SPPA under the preferred alternative was considered together with the effects of the projects mentioned above. When combined, the beneficial effects from the restoration projects and the adverse impacts resulting from the past oil spill, maintenance operations, and continued expansion of European beachgrass may balance out. Therefore, the cumulative impacts on the western snowy plover would be expected to be negligible.

OCEAN BEACH SPPA PREFERRED ALTERNATIVE F CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Western snowy plover habitat and individuals would be protected by closing the SPPA site to dogs and physically restraining dogs on leash in other areas; use of preferred habitat in the SPPA by the plover would be protected; the alternative is consistent with the recovery plan for the western snowy plover	Beneficial, assuming compliance	Negligible cumulative impacts

Ocean Beach (North of Stairwell 21 and South of Sloat Boulevard)

Alternative A: No Action. At Ocean Beach, the areas located north of Stairwell 21 and south of Sloat Boulevard are currently open to dogs under voice control. However, this area is located adjacent to the SPPA (which is preferred habitat for the plover and where seasonal leash restrictions are in effect) and may cause visitor confusion regarding leash laws, possibly resulting in off-leash dogs inadvertently

entering the SPPA. Only small numbers of western snowy plovers have been observed in areas outside the SPPA, including at this location.

Therefore, alternative A would result in long-term minor to moderate adverse impacts on the western snowy plover because dogs would continue to occasionally to frequently disturb and/or harass the birds at the adjacent SPPA and potentially limit their use of preferred habitat; a few individuals of the species in a small, localized area could be affected and reproductive success could be indirectly affected.

Under alternative A, no permit system exists for commercial dog walking. At Ocean Beach, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the western snowy plover.

Cumulative Impacts. The long-term minor to moderate adverse impacts on the western snowy plover from dogs at Ocean Beach under alternative A were considered together with the effects of the projects mentioned above under alternative A for the Ocean Beach SPPA. The beneficial effects from the restoration projects and the interim permitting program should reduce some of the adverse impacts on the western snowy plover from alternative A; however, impacts resulting from the past oil spill, maintenance operations, erosion control projects, and continued expansion of European beachgrass would adversely affect the western snowy plover. When combined, the beneficial and adverse effects from these actions may balance out. Therefore, the cumulative analysis for the western snowy plover will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the western snowy plover under this alternative would be expected to be long term, minor to moderate, and adverse.

OCEAN BEACH ALTERNATIVE A CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Only small numbers of western snowy plovers have been observed in this area, but disturbance and harassment could occur; also, dogs can access the SPPA from this beach	N/A	Long-term minor to moderate adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the beach north of Stairwell 21 and south of Sloat Boulevard. This alternative would provide protection for western snowy plovers when the leash law is followed, but dogs walked on leash still disturb birds (Lafferty 2001a, 1955). The USFWS states that "dogs on beaches can pose a serious threat to snowy plovers during both the breeding and nonbreeding season" (USFWS 2007a). However, only small numbers of western snowy plovers have been observed in areas outside the SPPA, including this location. Assuming compliance with proposed regulations, alternative B would result in negligible impacts on the western snowy plover because plover habitat and individuals of the species would be protected by closing the SPPA (which is preferred habitat for the plover) site to dogs and physically restraining dogs on leash on the beach, which would reduce chasing of the western snowy plover.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Ocean Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on the western snowy plover.

Cumulative Impacts. The negligible impacts on the western snowy plover from dogs at Ocean Beach under alternative B were considered together with the effects of the projects mentioned above under the Ocean Beach SPPA alternative B. When combined, the beneficial effects from the restoration projects and the adverse impacts resulting from the past oil spill, maintenance operations, and continued expansion of European beachgrass may balance out. Therefore, the cumulative impacts on the western snowy plover would be expected to be negligible.

OCEAN BEACH ALTERNATIVE B CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Only small numbers of western snowy plovers have been observed in this area (outside the SPPA); plover habitat and individuals would be protected by physically restraining dogs on leash on the beach, but even leashed dogs may affect the behavior of the plover	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow dogs under voice and sight control in a VSCA on the beach north of Stairwell 21; dogs would be prohibited south of Sloat Boulevard. This alternative would provide protection for the western snowy plover from dogs and consistency with the recovery plan (USFWS 2007a), but the VSCA would be sited immediately adjacent to the SPPA. Only small numbers of western snowy plovers have been observed in this area (outside the SPPA). Assuming compliance, alternative C would result in negligible to long-term minor adverse impacts on the western snowy plover. Although only small numbers of western snowy plovers have been observed, off-leash dogs would be allowed in part of this area. Dogs could occasionally disturb western snowy plovers in the VSCA adjacent to the SPPA on the beach. The reproductive success of individuals of the species would not be affected but plovers' use of preferred habitat (the SPPA) may be partially limited.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Ocean Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Commercial dog walking is not common at Ocean Beach, and it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the western snowy plover.

Cumulative Impacts. The negligible to long-term, minor, adverse impacts on the western snowy plover from dogs at Ocean Beach under alternative C were considered together with the effects of the projects mentioned above under the Ocean Beach SPPA alternative B. When combined, the beneficial effects from the restoration projects and the adverse impacts resulting from the past oil spill, maintenance operations, and continued expansion of European beachgrass may balance out. Therefore, the cumulative impacts on the western snowy plover would be expected to be negligible to long term, minor and adverse.

OCEAN BEACH ALTERNATIVE C CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts, assuming compliance	Only small numbers of western snowy plovers have been observed in this area (outside the SPPA), but the VSCA would be sited immediately adjacent to the SPPA	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B, except dogs would not be allowed on the beach south of Sloat Boulevard. Dogs would be allowed on leash on the beach north of Stairwell 21, where only small numbers of western snowy plovers have been observed. Due to physical restraint on leash, it is highly unlikely that dogs would access the SPPA. Even though dogs walked on leash still disturb birds (Lafferty 2001a, 1955), very few plovers use the beach north of Stairwell 21. This alternative would provide protection for the western snowy plover from dogs and consistency with the recovery plan (USFWS 2007a). Assuming compliance, this alternative would result in negligible impacts on the western snowy plover. Individual plovers and preferred habitat would be protected by closing the SPPA site to dogs and prohibiting dogs or physically restraining dogs on leash in other areas.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on the western snowy plover.

Cumulative Impacts. The negligible impacts on the western snowy plover from dogs at Ocean Beach under alternative D were considered together with the effects of the projects mentioned above under the Ocean Beach SPPA alternative B. When combined, the beneficial effects from the restoration projects and the adverse impacts resulting from the past oil spill, maintenance operations, and continued expansion of European beachgrass may balance out. Therefore, the cumulative impacts on the western snowy plover would be expected to be negligible.

OCEAN BEACH ALTERNATIVE D CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Only small numbers of western snowy plovers have been observed in this area; plover habitat and individuals would be protected by physically restraining dogs on leash on the beach, but even leashed dogs may affect the small numbers of plovers on the beach where dogs would be allowed	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the beach south of Sloat Boulevard and under voice and sight control in a VSCA

on the beach north of Stairwell 21. Assuming compliance, alternative E would result in negligible to long-term minor adverse impacts on the western snowy plover, because small numbers of western snowy plovers have been observed at this location and off-leash dogs would be allowed in part of this area. Dogs could occasionally disturb western snowy plovers in the VSCA located adjacent to the SPPA on the beach. The reproductive success of individuals of the species would not be affected but plovers' use of preferred habitat (the SPPA) may be partially limited.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Ocean Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Ocean Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the western snowy plover.

Cumulative Impacts. The negligible to long-term minor adverse impacts on the western snowy plover from dogs at Ocean Beach under alternative E were considered together with the effects of the projects mentioned above under the Ocean Beach SPPA alternative B. When combined, the beneficial effects from the restoration projects and the adverse impacts resulting from the past oil spill, maintenance operations, and continued expansion of European beachgrass may balance out. Therefore, the cumulative impacts on the western snowy plover would be expected to be negligible to long-term, minor and adverse.

OCEAN BEACH ALTERNATIVE E CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts, assuming compliance	Only small numbers of western snowy plovers have been observed in this area (outside the SPPA), but the VSCA would be sited immediately adjacent to the SPPA	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow dogs under voice and sight control in a VSCA on the beach north of Stairwell 21. On-leash dog walking would be permitted on Ocean Beach Trail. This alternative would provide protection for the western snowy plover from dogs and consistency with the recovery plan (USFWS 2007a). Only small numbers of western snowy plovers have been observed in the area outside the SPPA, but the VSCA would be sited immediately adjacent to the SPPA. Therefore, assuming compliance, the preferred alternative would result in negligible to long-term minor adverse impacts on the western snowy plover, because only small numbers of western snowy plovers have ever been observed at this location and off-leash dogs would be allowed in part of this area. Dogs could occasionally disturb western snowy plovers in the VSCA adjacent to the SPPA on the beach. The reproductive success of individuals of the species would not be affected but use of preferred habitat (the SPPA) by plovers may be partially limited.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Ocean Beach is not one of the park sites where permits would be issued to individual or commercial dog walkers to walk more than three dogs. Since commercial dog walking is not common at Ocean Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the western snowy plover.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the western snowy plover at or in the vicinity of this site.

Along the California coast, western snowy plovers have been extirpated from 33 of 53 nesting sites since 1970, and now number approximately 1,400 birds (USFWS 2007a). Although the western snowy plover does not nest at Ocean Beach, this area is still important for foraging, resting, and overwintering; chronic disturbance during the nonbreeding season could affect breeding behavior.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay; oil spills have historically affected plovers in GGNRA (USFWS 2007a). Western snowy plovers forage along the shoreline and in beach wrack (seaweed and other natural wave-cast organic debris) at the high-tide line and are thus at risk of direct exposure to oil during spills (USFWS 2007a). However, because western snowy plovers do not forage in the water, they are less susceptible to oiling than other species. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. As a result, the Natural Resource Damage Assessment process was initiated and a study estimated that of 52 snowy plovers (included 45 banded snowy plovers) potentially affected by the Cosco Busan oil spill, nearly all the snowy plovers survived the initial effects from the spill and were still alive 2 years later. The Marine Mammal Center, which works with the Oiled Wildlife Care Network, captured a total of 951 birds affected by the spill and found a total of 884 dead as a result of this incident (MMC 2009).

Proposed restoration projects and plans, maintenance operations, continued expansion of European beachgrass, and the *Ocean Beach Erosion Control Project* have the potential to affect the western snowy plover and its habitat at Ocean Beach. The *Ocean Beach Erosion Control Project* is developing long-term solutions to beach and bluff erosion problems at Ocean Beach along the Great Highway consistent with the enhancement of natural processes. An example of the regional projects and plans that will specifically benefit the western snowy plover is the *Abbotts Lagoon Area Dune Restoration Plan*, a project in the Point Reyes National Seashore that proposes to restore 300 acres of coastal dune habitat south of Abbotts Lagoon to benefit the western snowy plover. Habitat would be restored by removing highly invasive non-native plant species, which have greatly altered sand movement, dune structure, and habitat function for native plants and animals adapted to a coastal environment. Restoring dune habitat to a more natural condition and removing beachgrass would provide area-wide and regional benefits for the western snowy plover population at the park. Additionally, the proposed *Bolinas Lagoon Ecosystem Restoration Project* should benefit the western snowy plover, as Bolinas Lagoon boasts a healthy, though fragile, ecosystem that provides habitat for the western snowy plover. The *Ocean Beach Master Plan* includes plans to restore habitat at Ocean Beach including native dune restoration and beach nourishment, which may result in beneficial impacts on the Western snowy plover.

The negligible to long-term, minor, adverse impacts on the western snowy plover from dogs at Ocean Beach under the preferred alternative were considered together with the effects of the projects mentioned above. When combined, the beneficial effects from the restoration projects may be balanced by the adverse impacts resulting from the past oil spill, maintenance operations, and continued expansion of European beachgrass. Therefore, the cumulative impacts on the western snowy plover would be expected to be negligible to long term, minor and adverse.

OCEAN BEACH PREFERRED ALTERNATIVE F CONCLUSION TABLE

Western Snowy Plover Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts, assuming compliance	Only small numbers of western snowy plovers have been observed in this area (outside the SPPA), but the VSCA would be sited immediately adjacent to the SPPA	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

IMPACTS TO BANK SWALLOW (STATE THREATENED) BY SITE AND ALTERNATIVE

A nesting colony of the bank swallow formerly occupied burrows in the coastal bluff habitat at Fort Funston, one of only a few remaining coastal breeding sites for the species along the outer coast in California. The bank swallows were present at the Fort Funston bluffs during their breeding season (April to early August) and spend the nonbreeding season in South America. The bank swallows have not used the bluffs for nesting habitat in recent years and the seasonal closure was changed to a seasonal advisory. The sites continue to be monitored to determine if nesting in these areas resumes. These bluffs consist of layers of sandstone, mudstones, and conglomerates and are known as the Merced and Colma formations. These formations are described as soft, easily erodible, sedimentary rocks and are very susceptible to disturbance. This section describes impacts to both the bank swallow and the sensitive bluff habitat.

Fort Funston

Alternative A: No Action. Dogs are currently allowed under voice control on the beach and throughout the site, including on all trails at Fort Funston, with the exception of a 12-acre fenced Habitat Protection Area closure in upper Fort Funston and the north end of the Sunset Trail due to erosion. There is a seasonal advisory for bank swallow protection (April 1 – August 15) on a section of beach extending 50 feet from the base of the coastal bluff below the bank swallow habitat areas. Visitors can access areas surrounding the coastal bluffs from above the beach at the Funston Beach Trail North. To make visitors aware of the bank swallow habitat, signs and fencing (currently partially buried) along the bluff edge and along the beach below the colony have been installed. The bank swallow colony has been actively managed by the NPS due to the vulnerability of these bluff-nesting birds, the regional uniqueness of the colony, and the high human/dog use in the Fort Funston area. It has been documented by park personnel that people and dogs access the bluff tops and even gain access to the beach from the trails above the bluff area; this access is more frequent at the north end of the site, even during the former seasonal area closures (NPS 2007c, 5–6). The Fort Funston site experiences high visitor use, with the majority of use by private and commercial dog walkers (table 10). Current heavy use by recreationists affects the coastal bluff top at Fort Funston. The bank swallow colony at Fort Funston was monitored weekly by park personnel to document the number of burrows, bank swallow activity, and disturbance to the burrows and/or species during the breeding season (NPS 2007c, 3). Park personnel have observed both people and dogs climbing on the bluffs in the closed areas. A total of 172 dog-related incidents at Fort Funston were recorded from 2008 through 2011 with an additional 157 violations between 2012 and 2016 (tables 26a and 26b). In recent years the bank swallows have not used the burrows inside the GGNRA area at Fort Funston and therefore the closure has been changed to an advisory. The area remains high quality habitat and continues to be monitored for nesting activity. Effects from human/dog presence on the nesting success of the bank swallow at Fort Funston have not been adequately studied. It is possible but would be rare that dogs could dig at or collapse the burrows, and possible but rare that climbers (following after their dogs or on their own) could collapse the burrows. Currently, some dogs access the bluff from the

beach, resulting in some local disturbances to the bank swallow colony, and there have been numerous recent instances where hazardous conditions/pet rescues have occurred at Fort Funston, which result in further disturbance to the colony during the breeding season (table 10).

Common ravens are nest predators of the bank swallow at Fort Funston and are abundant at the site. Portions of Fort Funston have been heavily impacted by intense dog use, particularly where there is accelerated erosion from natural forces of the geologic resources (Merced and Colma formations). Closing the area through fencing and sign installation has not been successful in preventing recreational disturbance to the bank swallow colony, particularly given current conditions where sand movement has largely buried the signs and fences around the area. However, the colony has persisted despite increased human/dog use in the area (NPS n.d.e, 7–8). Historical evidence has shown that the colony has shifted locations periodically.

Therefore, alternative A would result in continued long-term minor adverse impacts on the bank swallow colony because impacts on the bluff habitat. The bluff habitat is known to be sensitive but is influenced by many other factors, including rapid erosion from storm events outside the breeding season (NPS 2007c, 1). Additional observations of the colony show that it fluctuates in numbers and locations along the cliffs at and near Fort Funston over time and is therefore somewhat resilient to disturbance (NPS 2007c, 3; Etchell 2010, 2-3).

Under alternative A, no permit system exists for commercial dog walking. However, commercial dog walking regularly occurs at Fort Funston. Commercial dog walking would continue to contribute to the long-term minor adverse impacts on the bank swallow.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the bank swallow at or in the vicinity of this site.

Fort Funston supports one of only a few remaining coastal breeding sites for the bank swallow in California; the closest other breeding site is at Año Nuevo State Reserve in Santa Cruz County, approximately 55 miles south of San Francisco and GGNRA. The bank swallow is protected at both Fort Funston in GGNRA and at Año Nuevo State Reserve. Park stewardship programs, which incorporate trail rehabilitation, including the Sunset Trail at GGNRA, may also provide a benefit to the bank swallows at Fort Funston through habitat protection for the species. Also, the San Francisco Public Utilities Commission is currently developing a *Lake Merced Watershed Plan*, which seeks to provide a comprehensive set of strategies to sustain the health of the Lake Merced Watershed while also providing recreational and educational opportunities. Located immediately to the east of Fort Funston (across Skyline Boulevard), Lake Merced is the largest freshwater wetland between Point Reyes in Marin County and Pescadero Marsh in southern San Mateo County. The 509-acre lake is an emergency source of water for the City of San Francisco and is used for firefighting or sanitation purposes if no other sources of water are available. The resource management portion of the plan, which focuses on flora and fauna preservation as well as restoration and enhancement of the watershed's natural areas, habitat values, and ecological function, should benefit the bank swallow, which forages at Lake Merced. In addition, Lake Merced is a natural area managed under the SNRAMP. Project activities included in the SNRAMP will also protect this listed species and provide long-term beneficial impacts to the bank swallow.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Fort Funston occurs regularly. Therefore, the interim compendium amendment could have a beneficial effect on bank swallow habitat by limiting the number of dogs commercial dog walkers could

have at the site at one time. This permitting could reduce disturbance of the bluffs through digging and climbing.

The long-term minor adverse impacts on the bank swallow and bluff habitat from dogs and dog walkers at Fort Funston under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat protection at the site, the SNRAMP, from the *Lake Merced Watershed Plan*, and the interim permitting program should reduce some of the adverse impacts on the bank swallow from alternative A. Therefore, the cumulative impacts on the bank swallow and bluff habitat under this alternative would be expected to be negligible.

FORT FUNSTON ALTERNATIVE A CONCLUSION TABLE

Bank Swallow Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Dogs have accessed the bluff from the beach and hazardous conditions/pet rescues have occurred, but these are infrequent and unlikely to affect the habitat; the bluff habitat is known to be sensitive but is influenced by many other factors, including natural erosion or slides and nest predators such as the common raven	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Fort Funston trails that are not closed to dogs, as well as on the full length of the beach, with a seasonal advisory extending 50 feet from the foot of the bluffs during the bank swallow nesting season (April 1 – August 15). Since the distribution of the draft plan/SEIS, the Battery Davis Trail has been closed to visitors by the NPS due to safety concerns from coastal erosion. Closed sections of the upland area include a 12-acre habitat protection area that restricts visitors and dogs for the protection of native plant communities, geologic resources, and the bank swallow colony. There would be a seasonal advisory (April 1 – August 15) on the beach at the base of the bluffs to limit disturbance near the bank swallow habitat and a section of trail at the north end of the site would be closed for the prevention of erosion. Dog walking under voice control would no longer be allowed under this alternative. Therefore, assuming compliance, alternative B would result in negligible impacts on the bank swallow because the bank swallow bluff habitat would be protected by eliminating access to the potential breeding sites in the bluff face.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Fort Funston, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on the bank swallow from dogs at the site. Overall impacts on the bank swallow from dogs walked by both commercial and private individuals are presented above; these impacts would be negligible.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the bank swallow at or in the vicinity of this site.

Fort Funston supports one of only a few remaining coastal breeding sites for the bank swallow in California; the closest other breeding site is at Año Nuevo State Reserve in Santa Cruz County, approximately 55 miles south of San Francisco and GGNRA. The bank swallow is protected at both Fort Funston in GGNRA and at Año Nuevo State Reserve. Park stewardship programs, which incorporate trail rehabilitation, including the Sunset Trail at GGNRA, may also provide a benefit to the bank swallows at Fort Funston through habitat protection for the species. Also, the San Francisco Public Utilities Commission is currently developing a *Lake Merced Watershed Plan*, which seeks to provide a comprehensive set of strategies to sustain the health of the Lake Merced Watershed while also providing recreational and educational opportunities. Located immediately to the east of Fort Funston (across Skyline Boulevard), Lake Merced is the largest freshwater wetland between Point Reyes in Marin County and Pescadero Marsh in southern San Mateo County. The 509-acre lake is an emergency source of water for the City of San Francisco and is used for firefighting or sanitation purposes if no other sources of water are available. The resource management portion of the plan, which focuses on flora and fauna preservation as well as restoration and enhancement of the watershed's natural areas, habitat values, and ecological function, should benefit the bank swallow, which forages at Lake Merced. In addition, Lake Merced is a natural area managed under the SNRAMP. Project activities included in the SNRAMP will also protect this listed species and provide long-term beneficial impacts to the bank swallow.

The negligible impacts on the bank swallow from dogs at Fort Funston under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat protection at the site, the SNRAMP, and from the *Lake Merced Watershed Plan* combined with the negligible impacts on the bank swallow from alternative B would result in beneficial cumulative impacts on the bank swallow.

FORT FUNSTON ALTERNATIVE B CONCLUSION TABLE

Bank Swallow Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The beach seasonal advisory would be in place during nesting season and the habitat would be protected by eliminating access to the potential breeding sites in the bluff face	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking on all trails north of the parking lot (except the Sunset Trail from the parking lot to the junction with the Chip Trail and the Funston Horse Trail, which would be closed to dogs, and the Battery Davis Trail, which is closed to visitors due to erosion), on the Funston Beach Trail South (sand ladder), and on Sunset Trail south of the main parking lot. Dog walking under voice and sight control would be allowed in a VSCA on the beach south of the Funston Beach Trail North and in another VSCA north of the main parking lot. No dogs would be allowed on the beach north of the Funston Beach Trail North, where the bank swallows have nested in the bluff face. A seasonal advisory for all visitors, extending 50 feet from the foot of the bluffs during the bank swallow nesting season (April 1 – August 15), would continue on the beach at the site. Assuming compliance, alternative C would result in no impact on the bank swallow because the bank swallow habitat would be protected by requiring on-leash dog walking on upland trails, and the VSCAs would be situated away from the potential breeding site. The bank swallow bluff habitat would be protected by eliminating access to the potential breeding sites in the bluff face.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk

more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may have up to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Fort Funston. Impacts on the bank swallow from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the preceding paragraph; therefore, there would be no impact from commercial dog walking.

Cumulative Impacts. The lack of impacts on the bank swallow from dogs at Fort Funston under alternative C was considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the habitat protection at the site, the SNRAMP, and from the *Lake Merced Watershed Plan* combined with the lack of impacts on the bank swallow from alternative C would result in beneficial cumulative impacts on the bank swallow.

FORT FUNSTON ALTERNATIVE C CONCLUSION TABLE

Bank Swallow Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	No dogs would be allowed north of the Funston Beach Trail North, where the bank swallows have nested in the bluff face; the habitat would thus be protected by eliminating access to the potential breeding sites in the bluff face; the VSCA would be situated away from the breeding site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking on the Sunset Trail and other trails not closed to dogs in the upland area, and on the beach south of the Funston Beach Trail North; dog walking under voice and sight control would be allowed in a VSCA east of the Sunset Trail and west of the Funston Horse Trail, north of the drinking fountain. No dogs would be allowed on the beach north of the Funston Beach Trail North, where the bank swallow habitat is located in the bluff face. A seasonal advisory extending 50 feet from the foot of the bluffs during the bank swallow nesting season (April 1 – August 15) currently exists on the site. Assuming compliance, alternative D would result in no impact on the bank swallow because the bank swallow habitat at Fort Funston would be protected by requiring on-leash dog walking, restricting voice and sight control dog walking to an upland VSCA away from bank swallow habitat, and prohibiting dogs in the vicinity of the bluff area. The bank swallow habitat would be protected by eliminating dog and human access to the potential breeding sites in the bluff face.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on the bank swallow.

Cumulative Impacts. The lack of impacts on the bank swallow from dogs at Fort Funston under alternative D was considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the habitat protection at the site, the SNRAMP, and from the *Lake Merced Watershed Plan* combined with the lack of impacts on the bank swallow from alternative D would result in beneficial cumulative impacts on the bank swallow.

FORT FUNSTON ALTERNATIVE D CONCLUSION TABLE

Bank Swallow Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	No dogs would be allowed north of Funston Beach Trail North, where the bank swallows have nested in the bluff face, and dogs would be physically restrained on leash south of the Funston Beach Trail North; habitat would thus be protected by eliminating access to the potential breeding sites in the bluff face	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on all trails outside of the upland VSCA except the Funston Horse Trail, which is closed to dogs, and the northern end of the Sunset Trail and the Battery Davis Trail, which are closed to all visitors due to erosion. On-leash dog walking would be allowed on the beach north of the Funston Beach Trail North. Dog walking under voice and sight control would be allowed in two VSCAs. One would be on the beach, extending south from the Funston Beach Trail North to Fort Funston's southern boundary. The second ("upland") VSCA would be a corridor extending north from the new trail to be built along the north edge of the main parking lot to, and including, the Funston Beach Trail North. The VSCA corridor would extend into the disturbed area across from the Funston Beach Trail North, and would include the Chip Trail and sections of the Sunset Trail, Funston Road, and Battery Davis Trail, all north of the parking lot. The northern section of beach would be closed to visitors and dogs (April 1 – August 15), extending 50 feet from the foot of the northernmost bluffs for protection of the bank swallow colony. Assuming compliance, alternative E would result in negligible impacts on the bank swallow. The bank swallow population and habitat would be protected by the closure and by requiring on-leash dog walking. The VSCAs would be located away from the breeding site. The bank swallow population and habitat would be protected by eliminating dog and human access to the breeding sites in the bluff face, and direct disturbance to the colony by dogs would essentially be eliminated.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may have up to six dogs off leash and the permit may restrict use by time and area. Impacts on the bank swallow from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts on the bank swallow would be expected from this user group. Impacts on the bank swallow from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the above paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible impacts on the bank swallow from dogs at Fort Funston under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the habitat protection at the site, the SNRAMP, and from the *Lake Merced Watershed Plan* combined with the negligible impacts on the bank swallow from alternative E would result in beneficial cumulative impacts on the bank swallow.

FORT FUNSTON ALTERNATIVE E CONCLUSION TABLE

Bank Swallow Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	On-leash dog walking would be allowed north of the Funston Beach Trail North, with a seasonal advisory in place during nesting season; the population/ habitat would be protected by eliminating access to the breeding sites in the bluff face; the VSCAs would be situated away from the breeding site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on all the trails north of the main parking lot that are outside the VSCA corridor, except that no dogs would be allowed on the Funston Horse Trail, or the north end of the Sunset Trail and the Battery Davis Trail which are closed to all visitors due to erosion. On-leash dog walking would be allowed on the Funston Beach Trail South (sand ladder), the Sunset Trail south of the main parking lot, and a future planned trail adjacent to Great Highway in the northern portion of the site. Dog walking under voice and sight control would be allowed in two VSCAs. One would be on the beach, extending south from the Funston Beach Trail North to Fort Funston's southern boundary. The second ("upland") VSCA would include the following areas: the Funston Trail, the disturbed area northeast of the Funston Trail, the Funston Beach Trail (North), the area east of (but not including) the Sunset Trail and north of the main parking lot, encompassing the Chip Trail and its eastern embankment, and the Battery Davis Trail (West). The Chip Trail would be hardened to improve accessibility. No dogs would be allowed on the beach north of the Funston Beach Trail North, where the bank swallows have nested in the bluff face. Although the northern beach would be closed to dog walking, an advisory for all visitors would still be established on the beach during the bank swallow nesting season (April 1 – August 15), extending 50 feet from the foot of the northern bluffs. Assuming compliance, the preferred alternative would result in no impact on the bank swallow because the bank swallow habitat would be protected by requiring on-leash dog walking and the VSCAs would be situated away from the breeding site. The bank swallow habitat would be protected by eliminating dog and human access to the potential breeding sites in the bluff face, and direct disturbance to the colony by dogs would essentially be eliminated.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. The permits may restrict use by time and area. Permits would be allowed at Fort Funston, but would be limited to the trails and VSCA areas south of the Fort Funston Trail (North). Impacts on the bank swallow from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the preceding paragraph; therefore, there would be no impact on the bank swallow from commercial dog walking.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the bank swallow at or in the vicinity of this site.

Fort Funston supports one of only a few remaining coastal breeding sites for the bank swallow in California; the closest other breeding site is at Año Nuevo State Reserve in Santa Cruz County, approximately 55 miles south of San Francisco and GGNRA. The bank swallow is protected at both Fort Funston in GGNRA and at Año Nuevo State Reserve. Park stewardship programs, which incorporate trail

rehabilitation, including the Sunset Trail at GGNRA, may also provide a benefit to the bank swallows at Fort Funston through habitat protection for the species. Also, the San Francisco Public Utilities Commission is currently developing a *Lake Merced Watershed Plan* that seeks to provide a comprehensive set of strategies to sustain the health of the Lake Merced Watershed while also providing recreational and educational opportunities. Located immediately to the east of Fort Funston (across Skyline Boulevard), Lake Merced is the largest freshwater wetland between Point Reyes in Marin County and Pescadero Marsh in southern San Mateo County. The 509-acre lake is an emergency source of water for the City of San Francisco and is used for firefighting or sanitation purposes if no other sources of water are available. The resource management portion of the plan, which focuses on flora and fauna preservation as well as restoration and enhancement of the watershed's natural areas, habitat values, and ecological function, should benefit the bank swallow, which forages at Lake Merced. In addition, Lake Merced is a natural area managed under the SNRAMP. Project activities included in the SNRAMP will also protect this listed species and provide long-term beneficial impacts to the bank swallow.

The lack of impacts on the bank swallow from dogs at Fort Funston under the preferred alternative was considered together with the effects of the projects mentioned above. The beneficial effects from the habitat protection at the site, the SNRAMP, and from the *Lake Merced Watershed Plan* combined with the lack of impacts on the bank swallow from the preferred alternative would result in beneficial cumulative impacts on the bank swallow.

FORT FUNSTON PREFERRED ALTERNATIVE F CONCLUSION TABLE

Bank Swallow Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	No dogs would be allowed north of the Funston Beach Trail North, where the bank swallows nest in the bluff face; the population/habitat would thus be protected by eliminating access to the breeding sites in the bluff face; the VSCAs would be situated away from the breeding site	Beneficial, assuming compliance	Beneficial cumulative impacts

IMPACTS TO NORTHERN SPOTTED OWL (FEDERALLY THREATENED) BY SITE AND ALTERNATIVE

In the study area, northern spotted owls have been documented at Homestead Valley, Oakwood Valley, and the Marin Headlands (Coyote Creek Drainage).

Homestead Valley

Alternative A: No Action. Under current conditions, dogs are allowed under voice control throughout the site. Northern spotted owls have been documented at Homestead Valley, where the trails and roads traverse coastal scrub and grassland habitat used as foraging habitat by the northern spotted owl. This northern spotted owl habitat has been mapped adjacent to NPS designated trails in areas that connect with neighborhoods in the eastern part of the site, which is used by local residents walking their dogs. Therefore, well-defined trails (that have not been designated by NPS) exist that go directly through spotted owl habitat, and the NPS recently discovered northern spotted owls nesting within 20 feet of a trail at Homestead Valley. The presence of dogs and disturbance by dogs could indirectly impact the owl by temporarily affecting the abundance and/or distribution of the dusky-footed woodrat, the primary prey

item for northern spotted owls (Lenth et al. 2008, 220). Northern spotted owls may also respond to barking dogs, as some dog barking can sound like the territorial calls of the northern spotted owl. However, a northern spotted owl vocalizing in response to a barking dog would not cause a perceptible or measurable risk to the owl. Northern spotted owl fledglings are often found on the ground near the nest after their first flight attempt. There have been a few cases reported of dogs discovering young northern spotted owls on the ground or alerting owners to the presence of owls on the ground. Though the likelihood of an occurrence is small, it is possible that young owls on the ground could be disturbed or injured by dogs if they are found on or near trails. Additionally, adult owls may be stressed or physically challenged when trying to protect fledglings on the ground in the presence of dogs.

Therefore, alternative A would result in continued negligible to long-term minor adverse impacts on the northern spotted owl because individual fledglings could occasionally be affected by dogs if found on a trail or immediately adjacent to a trail used by dogs. Impacts on the northern spotted owl would be considered perceptible changes in individuals of the species, but localized at the site and therefore minor because suitable owl habitat at this site is very limited.

Under alternative A, no permit system exists for commercial dog walking. At Homestead Valley, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the northern spotted owl.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the northern spotted owl at or in the vicinity of this site.

The *Final Recovery Plan for the Northern Spotted Owl* was developed in 2008 by the USFWS that stated that competition from the barred owl poses a complex threat to the spotted owl (USFWS 2011a). Recently at GGNRA, there have been increased barred owl detections at the park. Barred owls present a much greater long-term threat to the northern spotted owl at GGNRA than dogs. The recovery plan recommends barred owl removal experiments to determine the best path to help the spotted owl recover (USFWS 2011a, Recovery Action 29). A plan/EIS was recently initiated that will propose experimental removals of the barred owl, which could provide a cumulative benefit to the northern spotted owl. In addition to the barred owl, recent monitoring at GGNRA has documented several pairs of great horned owls in the vicinity of Oakwood Valley and Alta Trail/Orchard Fire Road/Pacheco Fire Road area. Great horned owls can prey on northern spotted owls and often displace them from nesting sites. The presence of great horned owls in these areas reduces the chance that northern spotted owls would be present. Besides competition from other owls, corvids (ravens, crows, and jays) or other nest predators may depredate spotted owl nests, thus also having a long-term negative effect on the northern spotted owl (NPS 2005b). However, there are many plans, projects, and activities that consider northern spotted owls in their planning and implementation, thus minimizing impacts, particularly during breeding season. Such activities include the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, and maintenance operations. Catastrophic wildfire and sudden oak death (caused by an introduced pathogen) could negatively affect the habitat of the northern spotted owl.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Homestead Valley is uncommon. Therefore, the interim compendium amendment could have a beneficial effect on northern spotted owls by limiting the number of dogs commercial dog walkers could have at the site at one time. This permitting could reduce instances of dogs disturbing or injuring owl

fledglings and the need for adult owls to protect fledglings from dogs. Additionally, the permitting program could reduce the affects dogs could have on the abundance and/or distribution of prey species of the owl.

The negligible to long-term minor adverse impacts on the northern spotted owl from dogs at Homestead Valley under alternative A were considered together with the effects of the projects mentioned above. There would be a combination of adverse and beneficial effects on the northern spotted owl from actions in and around Homestead Valley; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible to long-term minor adverse impacts from dogs under alternative A would result in negligible to long-term minor adverse cumulative impacts.

HOMESTEAD VALLEY ALTERNATIVE A CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Young owls on the ground could be disturbed or injured by dogs if found on or near trails since all trails at the site would allow dogs under voice control; adult owls could be stressed or physically challenged when trying to protect fledglings on the ground in the presence of dogs, but suitable owl habitat at this site is very limited	N/A	Negligible to long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Homestead Fire Road and on neighborhood connector trails (Homestead Trail and Homestead Summit Trail). Because dogs would be physically restrained on leash on all roads and trails at this site, it is unlikely that dogs would gain access to fledglings on the trails, assuming compliance. As a result, this alternative would provide protection for the northern spotted owl. The mere presence of dogs at the site could still affect the northern spotted owl (e.g., by disturbance from barking), but this effect cannot be quantified. Therefore, alternative B would result in negligible impacts on the owl because no measurable or perceptible changes in individuals of a species or suitable habitat would occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on the northern spotted owl.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the northern spotted owl at or in the vicinity of this site.

The *Final Recovery Plan for the Northern Spotted Owl* was developed in 2008 by the USFWS that stated that competition from the barred owl poses a complex threat to the spotted owl (USFWS 2011a). Recently at GGNRA, there have been increased barred owl detections at the park. Barred owls present a much greater long-term threat to the northern spotted owl at GGNRA than dogs. The recovery plan recommends barred owl removal experiments to determine the best path to help the spotted owl recover (USFWS 2011a, Recovery Action 29). A plan/EIS was recently initiated that will propose experimental removals of

the barred owl, which could provide a cumulative benefit to the northern spotted owl. In addition to the barred owl, recent monitoring at GGNRA has documented several pairs of great horned owls in the vicinity of Oakwood Valley and Alta Trail/Orchard Fire Road/Pacheco Fire Road area. Great horned owls can prey on northern spotted owls and often displace them from nesting sites. The presence of great horned owls in these areas reduces the chance that northern spotted owls would be present. Besides competition from other owls, corvids (ravens, crows, and jays) or other nest predators may depredate spotted owl nests, thus also having a long-term negative effect on the northern spotted owl (NPS 2005b). However, there are many plans, projects, and activities that consider northern spotted owls in their planning and implementation, thus minimizing impacts, particularly during breeding season. Such activities include the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, and maintenance operations. Catastrophic wildfire and sudden oak death (caused by an introduced pathogen) could negatively affect the habitat of the northern spotted owl.

The negligible impacts on the northern spotted owl from dogs at Homestead Valley under alternative B were considered together with the effects of the projects mentioned above. There would be a combination of adverse and beneficial effects on the northern spotted owl from actions in and around Homestead Valley; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from dogs under alternative B would result in negligible cumulative impacts.

HOMESTEAD VALLEY ALTERNATIVE B CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be physically restrained on leash and it would be unlikely that dogs would gain access to fledglings on/along the trails/roads	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. This alternative would have the same dog walking restrictions as alternative B, and impacts on the northern spotted owl would be the same, assuming compliance: negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Homestead Valley is not one of the sites where permits would be issued to walk more than three dogs. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the northern spotted owl.

Cumulative Impacts. Under alternative C, the cumulative impacts on the northern spotted owl at Homestead Valley would be the same as those under alternative B: negligible.

HOMESTEAD VALLEY ALTERNATIVE C CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be physically restrained on leash and it would be unlikely that dogs would gain access to fledglings on/along the trails/roads	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking on the Homestead Fire Road only. Although dogs would not be allowed on the neighborhood connector trails, the impacts would be the same as described above for alternative B, assuming compliance: negligible.

No commercial dog walking or permits to walk more than three dogs by private or commercial dog walkers would be allowed under alternative D; therefore, commercial and permitted dog walking would have no impact on the northern spotted owl.

Cumulative Impacts. The negligible impacts on the northern spotted owl from dogs at Homestead Valley under alternative D were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of adverse and beneficial effects on the northern spotted owl from actions in and around Homestead Valley; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from dogs under alternative D would result in negligible cumulative impacts.

HOMESTEAD VALLEY ALTERNATIVE D CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be physically restrained on leash and it would be unlikely that dogs would gain access to fledglings on/along the trails/roads	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. This alternative would have the same dog walking restrictions as alternative B, and impacts on the northern spotted owl would be the same, assuming compliance: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Homestead Valley is not one of the sites where permits would be issued to walk more than three dogs. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the northern spotted owl.

Cumulative Impacts. Under alternative E, the cumulative impacts on the northern spotted owl at Homestead Valley would be the same as those under alternative B: negligible.

HOMESTEAD VALLEY ALTERNATIVE E CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be physically restrained on leash and it would be unlikely that dogs would gain access to fledglings on/along the trails/roads	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would, allow on-leash dog walking on Homestead Fire Road and on neighborhood connector trails (Homestead Trail, Homestead Summit Trail, and Eagle Trail). Because dogs would be physically restrained on leash on all roads and trails at this site, it is unlikely that dogs would gain access to fledglings on the trail, assuming compliance. As a result, this alternative would provide protection for the northern spotted owl. However, the mere presence of dogs at the site could still affect the northern spotted owl (e.g., by disturbance from barking), but this affect cannot be quantified. Therefore, the preferred alternative would result in negligible impacts on the owl because no measurable or perceptible changes in individuals of a species or suitable habitat would occur.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Homestead Valley is not one of the sites where permits would be issued to walk more than three dogs. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the northern spotted owl.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the northern spotted owl at or in the vicinity of this site.

The *Final Recovery Plan for the Northern Spotted Owl* was developed in 2008 by the USFWS that stated that competition from the barred owl poses a complex threat to the spotted owl (USFWS 2011a). Recently at GGNRA, there have been increased barred owl detections at the park. Barred owls present a much greater long-term threat to the northern spotted owl at GGNRA than dogs. The recovery plan recommends barred owl removal experiments to determine the best path to help the spotted owl recover (USFWS 2011a, Recovery Action 29). A plan/EIS was recently initiated that will propose experimental removals of the barred owl, which could provide a cumulative benefit to the northern spotted owl. In addition to the barred owl, recent monitoring at GGNRA has documented several pairs of great horned owls in the vicinity of Oakwood Valley and Alta Trail/Orchard Fire Road/Pacheco Fire Road area. Great horned owls can prey on northern spotted owls and often displace them from nesting sites. The presence of great horned owls in these areas reduces the chance that northern spotted owls would be present. Besides competition from other owls, corvids (ravens, crows, and jays) or other nest predators may depredate spotted owl nests, thus also having a long-term negative effect on the northern spotted owl (NPS 2005b). However, there are many plans, projects, and activities that consider northern spotted owls in their planning and implementation, thus minimizing impacts, particularly during breeding season. Such activities include the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, and maintenance operations. Catastrophic wildfire and sudden oak death (caused by an introduced pathogen) could negatively affect the habitat of the northern spotted owl.

The negligible impacts on the northern spotted owl from dogs at Homestead Valley under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of adverse and beneficial effects on the northern spotted owl from actions in and around Homestead Valley; when combined, these would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from dogs under the preferred alternative would result in negligible cumulative impacts.

HOMESTEAD VALLEY PREFERRED ALTERNATIVE F CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be physically restrained on leash and it would be unlikely that dogs would gain access to fledglings on/along the trails/roads	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Oakwood Valley

Alternative A: No Action. Under current conditions, dogs are allowed on leash or under voice control on Oakwood Valley Fire Road and Oakwood Valley Trail from the junction with the fire road to the junction with Alta Trail. On-leash dog walking is allowed on Oakwood Valley Trail from the trailhead to the junction with Oakwood Valley Fire Road. Northern spotted owls have been documented at Oakwood Valley. Portions of the trails and roads are suitable habitat for the owl, especially in the south along Oakwood Valley Trail where park staff have recorded recent northern spotted owl activity since 2012, with the recent documented nesting attempt occurring in 2015. Oakwood Valley has a moderate level of use by dog walkers (table 10). The presence of dogs and disturbance by dogs could indirectly impact the owl by temporarily affecting the abundance and/or distribution of the dusky-footed woodrat, the primary prey item for northern spotted owls (Lenth et al. 2008). Northern spotted owls may also respond to barking dogs, as some dog barking can sound like the territorial calls of the northern spotted owl calls, but a northern spotted owl vocalizing in response to a barking dog would not cause a perceptible or measurable risk to the owl.

Therefore, alternative A would result in continued negligible to long-term minor adverse impacts on the northern spotted owl because suitable owl habitat could be limited as a result of dog presence, and young or adult owls on the ground could be occasionally disturbed or injured by dogs if found on or near trails since some trails at the site would allow dogs under voice control.

Under alternative A, no permit system exists for commercial dog walking. At Oakwood Valley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on the northern spotted owl.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the northern spotted owl at or in the vicinity of this site.

The *Final Recovery Plan for the Northern Spotted Owl* was developed in 2008 by the USFWS that stated that competition from the barred owl poses a complex threat to the spotted owl (USFWS 2011a). Recently at GGNRA, there have been increased barred owl detections at the park. Barred owls present a much greater long-term threat to the northern spotted owl at GGNRA than dogs. The recovery plan recommends

barred owl removal experiments to determine the best path to help the spotted owl recover (USFWS 2011a, Recovery Action 29). A plan/EIS was recently initiated that will propose experimental removals of the barred owl, which could provide a cumulative benefit to the northern spotted owl. In addition to the barred owl, recent monitoring at GGNRA has documented several pairs of great horned owls in the vicinity of Oakwood Valley and Alta Trail/Orchard Fire Road/Pacheco Fire Road. Great horned owls can prey on northern spotted owls and often displace them from nesting sites. The presence of great horned owls in these areas reduces the chance that northern spotted owls would be present. Besides competition from other owls, corvids (ravens, crows, and jays) or other nest predators may depredate spotted owl nests, thus also having a long-term negative effect on the northern spotted owl (NPS 2005b). However, there are many plans, projects, and activities that consider northern spotted owls in their planning and implementation, thus minimizing impacts, particularly during breeding season. Such activities include the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, and maintenance operations. Catastrophic wildfire and sudden oak death (caused by an introduced pathogen) could negatively affect the habitat of the northern spotted owl.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Oakwood Valley is uncommon. Therefore, the interim compendium amendment could have a beneficial effect on northern spotted owls by limiting the number of dogs commercial dog walkers could have at the site at one time. This permitting could reduce instances of dogs disturbing or injuring owl fledglings and the need for adult owls to protect fledglings from dogs. Additionally, the permitting program could reduce the affects dogs could have on the abundance and/or distribution of prey species of the owl.

The negligible to long-term minor adverse impacts on the northern spotted owl from dogs at Oakwood Valley under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects on the northern spotted owl from actions in and around Oakwood Valley and the interim permitting program should reduce some of the adverse impacts from alternative A. Therefore cumulative impacts would be negligible.

OAKWOOD VALLEY ALTERNATIVE A CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Portions of the trails/roads that would allow dogs under voice control would be in suitable habitat for the owl	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Oakwood Valley Fire Road and on the Oakwood Valley Trail from the trailhead to the junction with the fire road. Dogs would be physically restrained on leash on all roads and trails at this site, and it is unlikely that dogs would gain access to fledglings on the trail or disturb or harm adults should northern spotted owls establish a territory or nest in the vicinity of the trails considered in this alternative. Therefore, assuming compliance, alternative B would result in negligible impacts on the owl. This alternative would provide protection for the northern spotted owl at this site, but no measurable or perceptible changes to individuals of a species or suitable habitat would occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on the northern spotted owl.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the northern spotted owl at or in the vicinity of this site.

The *Final Recovery Plan for the Northern Spotted Owl* was developed in 2008 by the USFWS that stated that competition from the barred owl poses a complex threat to the spotted owl (USFWS 2011a). Recently at GGNRA, there have been increased barred owl detections at the park. Barred owls present a much greater long-term threat to the northern spotted owl at GGNRA than dogs. The recovery plan recommends barred owl removal experiments to determine the best path to help the spotted owl recover (USFWS 2011a, Recovery Action 29). A plan/EIS was recently initiated that will propose experimental removals of the barred owl, which could provide a cumulative benefit to the northern spotted owl. In addition to the barred owl, recent monitoring at GGNRA has documented several pairs of great horned owls in the vicinity of Oakwood Valley and Alta Trail/Orchard Fire Road/Pacheco Fire Road. Great horned owls can prey on northern spotted owls and often displace them from nesting sites. The presence of great horned owls in these areas reduces the chance that northern spotted owls would be present. Besides competition from other owls, corvids (ravens, crows, and jays) or other nest predators may depredate spotted owl nests, thus also having a long-term negative effect on the northern spotted owl (NPS 2005b). However, there are many plans, projects, and activities that consider northern spotted owls in their planning and implementation, thus minimizing impacts, particularly during breeding season. Such activities include the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, and maintenance operations. Catastrophic wildfire and sudden oak death (caused by an introduced pathogen) could negatively affect the habitat of the northern spotted owl.

The negligible impacts on the northern spotted owl from dogs at Oakwood Valley under alternative B were considered together with the effects of the projects mentioned above. There would be a combination of adverse and beneficial effects on the northern spotted owl from actions in and around Oakwood Valley; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from dogs under alternative B would result in negligible cumulative impacts.

OAKWOOD VALLEY ALTERNATIVE B CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be physically restrained on leash	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would establish a VSCA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with continuous fencing to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to the junction with Alta Trail. Assuming compliance, alternative C would result in negligible impacts on the owl. This alternative would provide protection for the northern spotted owl through continuous fencing at the VSCA and on-

leash dog walking in other areas, but no measurable or perceptible changes in individuals of a species or suitable habitat would occur.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Oakwood Valley is not one of the sites where permits would be issued to walk more than three dogs. Since commercial dog walking is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the northern spotted owl.

Cumulative Impacts. The negligible impacts on the northern spotted owl from dogs at Oakwood Valley under alternative C were considered together with the effects of the projects mentioned above under alternative B. There would be a combination of adverse and beneficial effects on the northern spotted owl from actions in and around Oakwood Valley; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from dogs under alternative C would result in negligible cumulative impacts.

OAKWOOD VALLEY ALTERNATIVE C CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be physically restrained on leash or in a continuously fenced VSCA	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same restrictions as alternative B, allowing on-leash dog walking only on the Oakwood Valley Fire Road and the Oakwood Valley Trail from the trailhead to the junction with the fire road. Dogs would not be allowed on the Oakwood Valley Trail above the junction of the trail and fire road. Dogs would be physically restrained on leash or prohibited on all roads and trails at this site, and it is unlikely that dogs would gain access to fledglings on the trail or disturb or harm adults should northern spotted owls establish a territory or nest in the vicinity of the road considered in this alternative. Therefore, alternative D would result in negligible impacts on the owl. This alternative would provide protection for the northern spotted owl, but no measurable or perceptible changes in individuals of a species or suitable habitat would occur.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on the northern spotted owl.

Cumulative Impacts. Under alternative D, the cumulative impacts on the northern spotted owl at Oakwood Valley would be the same as those under alternative B: negligible.

OAKWOOD VALLEY ALTERNATIVE D CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be physically restrained on leash	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would establish a VSCA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with noncontinuous fencing where needed to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to a new gate at Alta Trail. Impacts under this alternative would be the same as those under alternative C, assuming compliance: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Oakwood Valley is not one of the sites where permits would be issued to walk more than three dogs. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the northern spotted owl.

Cumulative Impacts. Under alternative E, the cumulative impacts on the northern spotted owl at Oakwood Valley would be the same as those under alternative C: negligible.

OAKWOOD VALLEY ALTERNATIVE E CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be physically restrained on leash or in a noncontinuously fenced VSCA	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Oakwood Valley Fire Road and on the Oakwood Valley Trail from the junction with the fire road to the junction with the Alta Trail. On-leash dog walking would also be allowed on the short segment of the Rhubarb Trail, which allows visitors from the Tennessee Valley Road community to access to the Oakwood Valley Fire Road without having to drive there. Assuming compliance, the preferred alternative would result in negligible impacts on the owl. This alternative would provide protection for the northern spotted owl through on-leash dog walking, but no measurable or perceptible changes to individuals of a species or suitable habitat would occur.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Oakwood Valley is not one of the sites where permits would be issued to walk more than three dogs. Since commercial dog walking is not common at Oakwood Valley, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the northern spotted owl.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the northern spotted owl at or in the vicinity of this site.

The *Final Recovery Plan for the Northern Spotted Owl* was developed in 2008 by the USFWS that stated that competition from the barred owl poses a complex threat to the spotted owl (USFWS 2011a). Recently, there have been increased barred owl detections at GGNRA. Barred owls present a much greater long-term threat to the northern spotted owl at GGNRA than dogs. The recovery plan recommends barred owl removal experiments to determine the best path to help the spotted owl recover (USFWS 2011a, Recovery Action 29). A plan/EIS was recently initiated that will propose experimental removals of the barred owl, which could provide a cumulative benefit to the northern spotted owl. In addition to the barred owl, recent monitoring at GGNRA has documented several pairs of great horned owls in the vicinity of the Oakwood Valley and Alta Trail/Orchard Fire Road/Pacheco Fire Road. Great horned owls can prey on northern spotted owls and often displace them from nesting sites. The presence of great horned owls in these areas reduces the chance that northern spotted owls would be present. Besides competition from other owls, corvids (ravens, crows, and jays) or other nest predators may depredate spotted owl nests, thus also having a long-term negative effect on the northern spotted owl (NPS 2005b). However, there are many plans, projects, and activities that consider northern spotted owls in their planning and implementation, thus minimizing impacts, particularly during breeding season. Such activities include the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, and maintenance operations. Catastrophic wildfire and sudden oak death (caused by an introduced pathogen) could negatively affect the habitat of the northern spotted owl.

The negligible impacts on the northern spotted owl from dogs at Oakwood Valley under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of adverse and beneficial effects on the northern spotted owl from actions in and around Oakwood Valley; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from dogs under the preferred alternative would result in negligible cumulative impacts.

OAKWOOD VALLEY PREFERRED ALTERNATIVE F CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be physically restrained on leash	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Marin Headlands Trails

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed along portions of the Coastal Trail (Hill 88 to Muir Beach), the Batteries Loop Trail, North Miwok Trail, County View Trail, and Marin Drive. Dog walking under voice control (or on leash) is allowed along other portions of the Coastal Trail (Golden Gate Bridge to Hill 88, including the Lagoon Loop Trail); the Coastal, Wolf Ridge, and Miwok Trail Loop; and the Old Bunker Fire Road Loop (includes a section of the Coastal Trail). Northern spotted owls have been documented at the Marin Headlands, and portions of the trails and roads are suitable habitat for the owl, especially in the north in the Coyote Creek Drainage. These trails experience low to moderate use by dog walkers. Dog-related incidents are high at this site with a total of 269 from 2008 through 2011 and 232 from 2012 through 2016. The majority of incidents were for having dogs within areas closed to pets (tables 17a and 17b). The presence of dogs and disturbance by dogs could indirectly impact the owl by temporarily affecting the abundance and/or distribution of the dusky-footed woodrat, the primary prey item for northern spotted owls (Lenth et al. 2008). Northern spotted owls may respond to barking dogs because some dog barking can sound like the territorial calls of

the northern spotted owl calls, but a northern spotted owl vocalizing in response to a barking dog would not cause a perceptible or measurable risk to the owl.

Therefore, alternative A would result in continued negligible to long-term minor adverse impacts on the northern spotted owl because suitable owl habitat could be limited as a result of dog presence, and young or adult owls on the ground could be occasionally disturbed or injured by dogs if found on or near trails since some trails at the site would allow dogs under voice control.

Under alternative A, no permit system exists for dog walking. At the Marin Headlands Trails, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the northern spotted owl at or in the vicinity of this site.

As stated for Oakwood Valley, the barred owl poses a complex threat to the spotted owl (USFWS 2011a). Recently at GGNRA, there have been increased barred owl detections at the park. Barred owls present a much greater long-term threat to the northern spotted owl at GGNRA than dogs. A plan/EIS was recently initiated that will propose experimental removals of the barred owl, which could provide a cumulative benefit to the northern spotted owl. In addition to the barred owl, recent monitoring at GGNRA has documented several pairs of great horned owls in the vicinity of the Marin Headlands. The presence of great horned owls in these areas reduces the chance that northern spotted owls would be present. Besides competition from other owls, corvids (ravens, crows, and jays) or other nest predators may depredate spotted owl nests, thus having a long-term negative effect on the northern spotted owl (NPS 2005b). However, many plans, projects, and activities consider northern spotted owls in planning and implementation, thus minimizing impacts, particularly during breeding season. Such activities include the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, and maintenance operations. Catastrophic wildfire and sudden oak death (caused by an introduced pathogen) could negatively affect the habitat of the northern spotted owl.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Marin Headlands Trails is uncommon. Therefore, the interim compendium amendment could have a beneficial effect on northern spotted owls by limiting the number of dogs commercial dog walkers could have at the site at one time. This permitting could reduce instances of dogs disturbing or injuring owl fledglings and the need for adult owls to protect fledglings from dogs. Additionally, the permitting program could reduce the affects dogs could have on the abundance and/or distribution of prey species of the owl.

The negligible to long-term minor adverse impacts on the northern spotted owl from dogs at Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects on the northern spotted owl from actions in and around the Marin Headlands and the interim permitting program should reduce some of the adverse impacts from alternative A. Therefore cumulative impacts would be negligible.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Portions of the trails/roads that would allow dogs under voice control would be in suitable habitat for the owl	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs on the trails at the Marin Headlands Trails. Therefore, assuming compliance, no impact on the northern spotted owl from dogs at the Marin Headlands would occur.

Since no dog walking would be permitted under alternative B at the Marin Headlands, commercial dog walking under alternative B would have no impacts on the northern spotted owl.

Cumulative Impacts. Projects and actions in and near Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the northern spotted owl at or in the vicinity of this site.

As stated for Oakwood Valley, the barred owl poses a complex threat to the spotted owl (USFWS 2011a). Recently at GGNRA, there have been increased barred owl detections at the park. Barred owls present a much greater long-term threat to the northern spotted owl at GGNRA than dogs. A plan/EIS was recently initiated that will propose experimental removals of the barred owl, which could provide a cumulative benefit to the northern spotted owl. In addition to the barred owl, recent monitoring at GGNRA has documented several pairs of great horned owls in the vicinity of the Marin Headlands. The presence of great horned owls in these areas reduces the chance that northern spotted owls would be present. Besides competition from other owls, corvids (ravens, crows, and jays) or other nest predators may depredate spotted owl nests, thus having a long-term negative effect on the northern spotted owl (NPS 2005b). However, many plans, projects, and activities consider northern spotted owls in planning and implementation, thus minimizing impacts, particularly during breeding season. Such activities include the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, and maintenance operations. Catastrophic wildfire and sudden oak death (caused by an introduced pathogen) could negatively affect the habitat of the northern spotted owl.

The lack of impacts on the northern spotted owl from dogs at the Marin Headlands Trails under alternative B was considered together with the effects of the projects mentioned above. There would be a combination of adverse and beneficial effects on the northern spotted owl from actions in and around the Marin Headlands; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the lack of impacts from dogs under alternative B would result in negligible cumulative impacts.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor. This corridor extends from the Rodeo Beach parking lot to the intersection of Bunker and McCullough roads via the North Lagoon Loop Trail, a section of the Miwok Trail, and the Rodeo Valley Trail, and includes the connector trail from the Rodeo Valley Trail to the Smith Road Trailhead. On-leash dog walking would be allowed on the Old Bunker Fire Road Loop (which includes a section of the Coastal Trail), and the Batteries Loop Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands Trails, while preserving and maintaining the integrity of interior habitat.

Dogs would be physically restrained on leash on all roads and trails at this site, and it is unlikely that dogs would gain access to fledglings on the trail or disturb or harm adults should northern spotted owls establish a territory or nest in the vicinity of the trails considered in this alternative. Therefore, assuming compliance, alternative C would result in negligible impacts on the owl. This alternative would provide protection for the northern spotted owl at this site, but no measurable or perceptible changes to individuals of a species or suitable habitat would occur.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Marin Headlands Trails is not one of the sites where permits would be issued to walk more than three dogs. Since commercial dog walking is not common at the Marin Headlands, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the northern spotted owl.

Cumulative Impacts. The negligible impacts on the northern spotted owl from dogs at Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned under alternative B. There would be a combination of adverse and beneficial effects on the northern spotted owl from actions in and around the Marin Headlands; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from dogs under alternative C would result in negligible cumulative impacts.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be physically restrained on leash	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B (dogs would be prohibited at the site); therefore alternative D would result in no impacts on the northern spotted owl, assuming compliance.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on the northern spotted owl.

Cumulative Impacts. Under alternative D, the cumulative impacts on the northern spotted owl at the Marin Headlands Trails would be the same as those under alternative B: negligible.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Conzelman Coastal Trail from Highway 101 to the McCullough intersection, and from there to the Coastal Trail Bike Route, including Julian Road, to Rodeo Beach parking lot. On-leash dog walking would be allowed on the Old Bunker Fire Road Loop (which includes a section of the Coastal Trail), Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, Marin Drive, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. Impacts under this alternative would be the same as those under alternative C, assuming compliance: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, the Marin Headlands is not one of the sites where permits would be issued to walk more than three dogs. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the northern spotted owl.

Cumulative Impacts. Under alternative E, the cumulative impacts on the northern spotted owl at the Marin Headlands Trails would be the same as those under alternative C: negligible.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be physically restrained on leash	Beneficial to no change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, extending from the Rodeo Beach parking lot to the intersection of Bunker and McCullough roads via the Lagoon Loop Trail, a section of the Miwok Trail, the Rodeo Valley Trail. The corridor includes the connector trail from Rodeo Valley Trail to the Smith Road trailhead. On-leash dog walking would also be available on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), Batteries Loop Trail, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat.

Assuming compliance, the preferred alternative would result in negligible impacts on the owl. This alternative would provide protection for the northern spotted owl through on-leash dog walking, but there would be no measurable or perceptible changes to individuals of a species or suitable habitat.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under the preferred alternative, permits would be issued allowing people to walk more than three dogs on a short segment of the North Lagoon Loop Trail. Allowing dog walkers with more than three dogs on the North Lagoon Loop Trail from the Rodeo Beach parking lot to the pedestrian bridge creates a loop with the permitted areas allowed under the preferred

alternative for Rodeo Beach. Since commercial dog walking is not common at the Marin Headlands, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the northern spotted owl.

Cumulative Impacts. Projects and actions in and near Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the northern spotted owl at or in the vicinity of this site.

As stated previously for Oakwood Valley, the barred owl poses a complex threat to the spotted owl (USFWS 2011a). Recently at GGNRA there have been increased barred owl detections at the park. Barred owls present a much greater long-term threat to the northern spotted owl at GGNRA than dogs. A plan/EIS was recently initiated that will propose experimental removals of the barred owl, which could provide a cumulative benefit to the northern spotted owl. In addition to the barred owl, recent monitoring at GGNRA has documented several pairs of great horned owls in the vicinity of the Marin Headlands. The presence of great horned owls in these areas reduces the chance that northern spotted owls would be present. Besides competition from other owls, corvids (ravens, crows, and jays) or other nest predators may depredate spotted owl nests, thus also having a long-term negative effect on the northern spotted owl (NPS 2005b). However, there are many plans, projects, and activities that consider northern spotted owls in their planning and implementation, thus minimizing impacts, particularly during breeding season. Such activities include the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, park stewardship programs, implementation of the *Fire Management Plan* (NPS 2005b), Wildland/Urban Interface Initiative projects, and maintenance operations. Catastrophic wildfire and sudden oak death (caused by an introduced pathogen) could negatively affect the habitat of the northern spotted owl.

The negligible impacts on the northern spotted owl from dogs at Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of adverse and beneficial effects on the northern spotted owl from actions in and around the Marin Headlands; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from dogs under the preferred alternative would result in negligible cumulative impacts.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE F CONCLUSION TABLE

Northern Spotted Owl Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be physically restrained on leash	Beneficial to no change, assuming compliance	Negligible cumulative impacts

IMPACTS TO GUADALUPE FUR SEAL (FEDERALLY AND STATE THREATENED)

This species is an occasional vagrant of offshore marine habitat and could be found hauled out or stranded, if injured or sick, along the coastal portions of GGNRA. However, this species is unlikely to be affected by dog management. In 9 years of collected data by the Marine Mammal Center (2000 through 2005 and 2007 through 2009), there was only one recorded stranding of a Guadalupe fur seal at GGNRA (Stinson Beach) (MMC 2010). Therefore, a detailed impact analysis of this species is not necessary for this project, but a general discussion of impacts on hauled-out or stranded pinnipeds is included in the "Wildlife" section of chapter 4 for each applicable site at GGNRA.

IMPACTS TO STELLER SEA LION (FEDERALLY THREATENED)

There is a historical sea lion haul-out location at Seal Rock in San Francisco, and this species is an occasional vagrant of offshore marine habitat. Steller sea lions could be found hauled out or stranded, if injured or sick, along the coastal portions of GGNRA. However, this species is unlikely to be affected by dog management and in 9 years of collected data by the Marine Mammal Center (2000 through 2005 and 2007 through 2009); there were no recorded strandings of Steller sea lions at GGNRA (MMC 2010). Therefore, a detailed impact analysis of this species is not necessary for this project, but a general discussion of impacts on hauled-out or stranded pinnipeds is included in the "Wildlife" section of chapter 4 for each applicable site at GGNRA.

FEDERALLY AND STATE-LISTED PLANT SPECIES

At GGNRA, the management of vegetation is primarily focused on research, monitoring, and actively restoring habitat for threatened, endangered, and unique plant species. Restoration efforts at GGNRA have included decompacting soils, removing non-native plant species, and planting listed and unique plant species to expand on existing (or historical) populations. For new and/or pending properties recently acquired by the park (Cattle Hill), inventorying of listed and unique plant species is has not been completed because the properties are not yet managed by the NPS. Therefore, suitable habitat only is identified at these sites because site-specific information concerning listed plant species at these locations is not yet available. Once the properties transfer to the NPS, site-specific surveys would be planned. Federally and state-listed plant species are discussed in the following sections when the listed plant species occurs at or potential habitat is provided at specific GGNRA sites in areas that allow dogs. Although habitats at GGNRA support many species with special status, only those species potentially affected by this final plan/EIS are discussed in this section.

IMPACTS TO MARSH SANDWORT (FEDERALLY ENDANGERED) BY SITE AND ALTERNATIVE

This plant species inhabits wetland and riparian areas. In December 2011, two new populations of marsh sandwort were established in the Marin Headlands, including at a site near the Rodeo Beach overflow parking lot, and along the Miwok Trail in Rodeo Valley. Monitoring of these species has indicated that more than half of the established individuals are still surviving at these sites (Acierto et al. 2012).

Marin Headlands Trails

Alternative A: No Action. Currently, dog walking on leash and under voice control is allowed on the Coastal Trail from Golden Gate Bridge to Hill 88 (including the Lagoon Loop Trail), on the Coastal Trail, Wolf Ridge, and Miwok Trail Loop, and on the Old Bunker Fire Road Loop. On-leash dog walking is allowed on the Coastal Trail from Hill 88 to Muir Beach, and the Batteries Loop Trail.

Marin Headlands experiences low to moderate visitation from dog walkers. Dog-related incidents are high at this site. There were 269 total dog-related incidents from 2008 through 2011, with an additional 232 between 2012 and 2016 (tables 17a and 17b). Along these trails, physical disturbance and nutrient addition are currently happening along the trails and fire roads and in off-trail areas throughout the site due to unleashed dogs. Under alternative A, dogs could impact the two populations of the marsh sandwort and potential habitat through trampling, digging, or dog waste while traversing the site off leash. Because the populations of the marsh sandwort are located in proximity to trails and other areas where dogs are frequently walked off leash, this alternative would result in long-term moderate adverse impacts on suitable habitat for marsh sandwort at Marin Headlands. Because few individuals of the species currently

exist at the site, it is possible that impacts could affect the reproductive success of individuals of the species; therefore, impacts would be moderate.

Under alternative A, no permit system exists for commercial dog walking. Currently, commercial dog walking use is low to moderate at Marin Headlands; therefore, commercial dog walking would have negligible impacts on marsh sandwort.

Cumulative Impacts. Several projects and actions in and near the trails of the Marin Headlands were considered in the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Such projects would likely restore and protect potential habitat for the marsh sandwort. Additionally, ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can beneficially affect habitat at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Marin Headlands Trails is uncommon. However, the interim compendium amendment could have a slight beneficial effect on marsh sandwort by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and nutrient addition from dog waste.

The long-term moderate adverse impacts on the marsh sandwort and potential habitat from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the actions mentioned above. The benefits to potential habitat from park stewardship programs and other restoration projects in the area of this site would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from park stewardship programs and other restoration projects and the interim permitting program combined with the long-term moderate adverse impacts from alternative A would result in long-term minor adverse cumulative impacts on the marsh sandwort.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Marsh Sandwort Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Off-leash dogs could affect populations of the marsh sandwort, as well as suitable habitat through digging, trampling, and dog waste; known populations are in proximity to trail and parking areas	N/A	Long-term, minor, adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, no dogs would be allowed at the Marin Headlands, which would eliminate physical disturbance by dogs and nutrient addition from dog waste.

Therefore, assuming compliance, alternative B would result in no impact on the marsh sandwort or habitat at the site.

Since no dog walking would be permitted under alternative B at the Marin Headlands, commercial dog walking under alternative B would have no impacts on the marsh sandwort.

Cumulative Impacts. Several projects and actions in and near the trails of the Marin Headlands were considered in the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of park stewardship programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Such projects would likely restore and protect potential habitat for the marsh sandwort. Additionally, ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can beneficially affect habitat at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

The lack of impacts on the marsh sandwort and marsh sandwort habitat from dogs at the Marin Headlands under alternative B were considered together with the effects of the projects mentioned above. The anticipated beneficial effects from park stewardship programs and the watershed plan combined with the lack of impacts on the marsh sandwort from alternative B would result in beneficial cumulative impacts.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Marsh Sandwort Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would not be allowed at the site, protecting the marsh sandwort from adverse impacts of dogs	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor. This corridor extends from the Rodeo Beach parking lot to the intersection of Bunker and McCullough roads via North Lagoon Loop Trail, a section of the Miwok Trail, and the Rodeo Valley Trail, and includes the connector trail from the Rodeo Valley Trail to the Smith Road Trailhead. On-leash dog walking would also be allowed on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), and the Batteries Loop Trail.

Dogs would be physically restrained on leash on trails open to dog walking at this site. Although having dogs on leash would limit impacts to the marsh sandwort, one of the populations is along a trail that is open to dog walking, and on-leash dogs may still impact this population. Impacts would be measurable and perceptible, but would be localized in a relatively small area. Therefore, assuming compliance, alternative C would result in overall long-term minor adverse impacts on the marsh sandwort at Marin Headlands.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Marin Headlands Trails is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the

number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the marsh sandwort.

Cumulative Impacts. The long-term minor adverse impacts on marsh sandwort and suitable habitat from dogs at the Marin Headlands under alternative C were considered together with the effects of the projects mentioned above under alternative B. The anticipated beneficial effects from park stewardship programs should reduce some of the adverse impacts on the marsh sandwort from alternative C. Therefore, the cumulative impacts on marsh sandwort under this alternative would be expected to be negligible.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Marsh Sandwort Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	A known population is located along a trail open to dog walking; physical restraint of dogs would protect marsh sandwort and potential habitat in all other areas of the site	Beneficial change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Similar to alternative B, no dogs would be allowed at the Marin Headlands under alternative D, which would eliminate physical disturbance by dogs and nutrient addition from dog waste. Therefore, assuming compliance, alternative D would result in no impact on the marsh sandwort of habitat at the site.

Since no dog walking would be permitted under alternative D at the Marin Headlands, commercial dog walking under alternative D would have no impacts on the marsh sandwort.

Cumulative Impacts. Under alternative D cumulative impacts on the marsh sandwort at Marin Headlands would be the same as under alternative B: beneficial cumulative impacts.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Marsh Sandwort Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would not be allowed at the site, protecting the marsh sandwort from adverse impacts of dogs	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the Conzelman Coastal Trail from Highway 101 to the McCullough intersection and from there to the Coastal Trail Bike Route, which includes Julian Road to the Rodeo Beach parking lot. On-leash dog walking would be allowed on the Old Bunker Fire Road Loop (which includes a section of the Coastal Trail), Batteries Loop Trail, North Miwok Trail from Tennessee Valley to Highway 1, County View Trail, Marin Drive, Rodeo Avenue Trail, and Morning Sun Trail.

Dogs would be physically restrained on leash on trails open to dog walking at this site. Although having dogs on leash would limit impacts to the marsh sandwort, one of the populations is along a trail, and on-leash dogs may still impact this population. Impacts would be measurable and perceptible, but would be localized in a relatively small area. Therefore, assuming compliance, alternative E would result in overall long-term minor adverse impacts on the marsh sandwort at Marin Headlands.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Marin Headlands Trails is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking activity is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the marsh sandwort.

Cumulative Impacts. The long-term minor adverse impacts on marsh sandwort and suitable habitat from dogs at the Marin Headlands under alternative E were considered together with the effects of the projects mentioned above under alternative B. The anticipated beneficial effects from park stewardship programs should reduce some of the adverse impacts on the marsh sandwort from alternative E. Therefore, the cumulative impacts on marsh sandwort under this alternative would be expected to be negligible.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Marsh Sandwort Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	A known population is located along a trail open to dog walking; physical restraint of dogs would protect marsh sandwort and potential habitat in all other areas of the site	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, extending from the Rodeo Beach parking lot to the intersection of Bunker and McCullough Roads via the North Lagoon Loop Trail, a section of the Miwok Trail, and the Rodeo Valley Trail. The corridor includes the connector trail from Rodeo Valley Trail to the Smith Road trailhead. On-leash dog walking would also be available on the Old Bunker Fire Road Loop (including a section of the Coastal Trail), Batteries Loop Trail, Rodeo Avenue Trail, and Morning Sun Trail. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. Impacts in areas adjacent to the trails/fire roads would be long term, minor, and adverse since this vegetation would be affected by trampling and dog waste. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

Dogs would be physically restrained on leash on trails open to dog walking at this site. Although having dogs on leash would limit impacts to the marsh sandwort, one of the populations is along a trail, and on-leash dogs may still impact this population. Impacts would be measurable and perceptible, but would be localized in a relatively small area. Therefore, assuming compliance, the preferred alternative would result in overall long-term minor adverse impacts on the marsh sandwort at Marin Headlands.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Under the preferred alternative, permits would be issued allowing dog walkers to have more than three dogs on a short segment of the North Lagoon Loop Trail. Allowing dog walkers with more than three dogs on the North Lagoon Loop Trail from the Rodeo Beach parking lot to the pedestrian bridge creates a loop with the permitted areas allowed under the preferred alternative for Rodeo Beach. Since commercial dog walking activity is not common at the Marin Headlands Trails, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on marsh sandwort.

Cumulative Impacts. Several projects and actions in and near the trails of the Marin Headlands were considered in the cumulative impacts analysis (appendix K). There would be beneficial impacts from park stewardship programs that enhanced habitat. Ongoing parkwide restoration and enhancement projects, including the GGNRA natural stewardship programs and the *Marin Countywide Plan* (County of Marin 2007) would also have beneficial impacts. Lastly, the GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails. These projects would have beneficial impacts.

The long-term minor adverse impacts on marsh sandwort and suitable habitat from dogs at the Marin Headlands under alternative F were considered together with the effects of the projects mentioned above. The anticipated beneficial effects from park stewardship programs should reduce some of the adverse impacts on the marsh sandwort from the preferred alternative. Therefore, the cumulative impacts on marsh sandwort under this alternative would be expected to be negligible.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE F CONCLUSION TABLE

Marsh Sandwort Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	A known population is located along a trail open to dog walking; physical restraint of dogs would protect marsh sandwort and potential habitat in all other areas of the site	Beneficial, assuming compliance	Negligible cumulative impacts

IMPACTS TO FRANCISCAN MANZANITA (FEDERALLY ENDANGERED) BY SITE AND ALTERNATIVE

This plant species inhabits serpentine chaparral shrub. The only known occurrence of this species occurs in the Presidio Area B, but three areas of the Presidio Area A (within GGNRA) have been designated as critical habitat for the Franciscan manzanita even though the plant does not currently occur in these areas. These critical habitat areas are within Fort Point and Baker Beach (USFWS 2012).

Fort Point

Alternative A: No Action. Currently, on-leash dog walking is allowed on the Fort Point Promenade, Andrews Road, Presidio Promenade, and Battery East Trail. Dogs are allowed on leash on the grassy area near the bathroom. Fort Point has low to high visitor use by dog walkers, and off-leash dog walking is frequently observed at the site.

Although Fort Point provides critical habitat for the Franciscan manzanita, the plant does not currently occur at the site (USFWS 2012, 54530). There is a mapped critical habitat area for the Franciscan manzanita at this site, but current dog use at the site, particularly off-leash dogs, could prevent successful introduction of the species to the site. Potential habitat for the Franciscan manzanita is found within the vegetated areas between the promenade and the buildings, parking lots, and roads. The Battery East Trail, Andrews Road, and Presidio Promenade all cross through a portion of this critical habitat. Compliance issues with off-leash dogs along these trails could result in trampling, digging, or dog waste, which may preclude the introduction of the Franciscan manzanita to Fort Point. Off-leash and on-leash dog walking under alternative A would result in long-term minor adverse impacts on Franciscan manzanita habitat.

Impacts from on-leash dog walking on trails to soils and habitat would be limited to the trails and the 6-foot corridor immediately adjacent to the trail, and impacts would be localized to a relatively small area when compared to the whole site. The impacts of noncompliant off-leash dogs could occur throughout the site.

Under alternative A, there is no permit system for commercial dog walking. However, commercial dog walking is currently uncommon in the Fort Point area; therefore, commercial dog walking would have negligible impacts on the Franciscan manzanita.

Cumulative Impacts. Projects and actions in and near Fort Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on Franciscan manzanita habitat at or in the vicinity of this site.

Improvements are being made to Fort Point facilities to improve visitor accessibility (NPS 2010g, 1). The Doyle Drive replacement project will replace the 73-year-old Doyle Drive and make structural and seismic improvements that will take place on lands in Area B of the Presidio (USDOT 2009, 1; Presidio Parkway 2010, 1). This project has the potential to adversely affect Franciscan manzanita habitat at Fort Point through construction and project work in areas that may provide potential habitat for Franciscan manzanita. This could limit the success of potential introduction of this species at the site. The PTMP includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures. The PTMP would be beneficial for the Franciscan manzanita, as these projects may improve or expand potential habitat for the species.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Fort Point is uncommon. However, the interim compendium amendment could have a slight beneficial effect on Franciscan manzanita habitat by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and nutrient addition from dog waste.

The long-term minor adverse impacts on suitable Franciscan manzanita habitat from dogs at Fort Point were considered together with the effects of the projects mentioned above. The anticipated beneficial effects from the PTMP program and the interim permitting program should reduce the adverse impacts on Franciscan manzanita habitat from the Doyle Drive replacement and from alternative A. Therefore, cumulative impacts on Franciscan manzanita under alternative A are anticipated to be negligible.

FORT POINT ALTERNATIVE A CONCLUSION TABLE

Franciscan Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Off-leash dogs could affect suitable habitat for Franciscan manzanita through digging, trampling, and dog waste	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Similar to alternative A, alternative B would allow on-leash dog walking on the Fort Point Promenade, Andrews Road, Presidio Promenade, Battery East Trail, and on the grassy area near the bathroom.

There are currently no mapped occurrences of Franciscan manzanita at Fort Point, but a critical habitat area is mapped at this site. The LOD would include trails through a critical habitat area that is open to dog walking and the area adjacent to the trail up to 6 feet. Because dogs would be physically restrained on-leash on the trails, this alternative would provide relative protection for suitable habitat for the Franciscan manzanita, as impacts in the LOD would be small compared to the entire site. Overall, assuming compliance with regulations, alternative B would result in negligible impacts on the Franciscan manzanita. No measurable or perceptible changes are anticipated to critical Franciscan manzanita habitat, and on-leash dog walking on trails is not expected to preclude the introduction of the species to the site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs on leash per person with no permit required. Since commercial dog walking at Fort Point Promenade/Fort Point NHS Trails is not common, it is likely that commercial dog walking would have negligible impacts on the Franciscan manzanita.

Cumulative Impacts. Projects and actions in and near Fort Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on Franciscan manzanita habitat at or in the vicinity of this site.

Improvements are being made to Fort Point facilities to improve visitor accessibility (NPS 2010g, 1). The Doyle Drive replacement project will replace the 73-year-old Doyle Drive and make structural and seismic improvements that will take place on lands in Area B of the Presidio (USDOT 2009, 1; Presidio Parkway 2010, 1). This project has the potential to adversely affect Franciscan manzanita habitat at Fort Point through construction and project work in areas that may provide potential habitat for Franciscan manzanita. This could limit the success of potential introduction of this species at the site. The PTMP includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures. The PTMP would be beneficial for the Franciscan manzanita, as these projects may improve or expand potential habitat for the species.

The negligible impacts on suitable Franciscan manzanita habitat from dogs at Fort Point under alternative B were considered together with the effects of the projects mentioned above. The anticipated beneficial effects from the PTMP with the negligible impacts on the Franciscan manzanita habitat from the Doyle Drive replacement project and from alternative B would result in negligible cumulative impacts.

FORT POINT ALTERNATIVE B CONCLUSION TABLE

Franciscan Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Franciscan manzanita	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed on the same trails as alternative B and alternative C would have the same impacts: negligible impacts on Franciscan manzanita habitat, and negligible cumulative impacts.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs on leash per person with no permit required. Fort Point is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking at Fort Point Promenade/Fort Point NHS Trails is not common, it is likely that commercial dog walking would have negligible impacts on the Franciscan manzanita.

Cumulative Impacts. The negligible impacts on suitable Franciscan manzanita habitat from dogs at Fort Point under alternative C were considered together with the effects of the projects mentioned above under alternative B. The anticipated beneficial effects from the PTMP with the negligible impacts on the Franciscan manzanita habitat from the Doyle Drive replacement project and from alternative C would result in negligible cumulative impacts.

FORT POINT ALTERNATIVE C CONCLUSION TABLE

Franciscan Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Franciscan manzanita	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would only be allowed on the Battery East Trail. Currently, Franciscan manzanita does not occur at Fort Point, but there is a critical habitat area mapped at this site. The Battery East Trail would go through this critical habitat area.

Impacts to Franciscan manzanita habitat would be limited to the trail and the 6-foot corridor immediately adjacent to the trail. The impacts would be negligible because restraining dogs on-leash on the Battery East Trail through critical habitat would restrict impacts to a relatively small region when compared to the whole site, particularly since dog walking would only be allowed on one trail at the site. Impacts in the LOD would occur as a result of disturbance by dogs through trampling, dog waste, and nutrient addition, but these impacts would be localized in a relatively small area. Overall, impacts would be negligible, assuming compliance under alternative D, because no measurable or perceptible changes in Franciscan manzanita habitat would be expected. Additionally on-leash dog walking on the trail is not expected to preclude the introduction of the species to the site.

No commercial dog walking would be allowed under alternative D, and no permits would be issued allowing any dog walker to have more than three dogs. Private dog walkers would be allowed up to three dogs. Since commercial dog walking is not common at the Fort Point Promenade/Fort Point NHS Trails, it is likely that prohibiting commercial dog walking from this site would have negligible impacts on Franciscan manzanita habitat.

Cumulative Impacts. Under alternative D, the cumulative impacts on Franciscan manzanita at this park site would be the same as those under alternative B: negligible.

FORT POINT ALTERNATIVE D CONCLUSION TABLE

Franciscan Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Franciscan manzanita	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts would be the same: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs on leash per person with no permit required. Fort Point is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking at Fort Point Promenade/Fort Point NHS Trails is not common, it is likely that commercial dog walking would have negligible impacts on the Franciscan manzanita.

Cumulative Impacts. Under alternative E, the cumulative impacts on potential Franciscan manzanita habitat at Fort Point would be the same as those under alternative B: negligible.

FORT POINT ALTERNATIVE E CONCLUSION TABLE

Franciscan Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Franciscan manzanita	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. Under the preferred alternative, on-leash dog walking would be allowed on the Fort Point Promenade, Andrews Road, Presidio Promenade, Battery East Trail, Presidio Coastal Trail, Crissy Field Promenade, the Warming Hut Picnic Area, as well as the Fort Point, Battery East, and West Bluff Parking lots, and on the grassy area near the bathroom.

There are currently no mapped occurrences of Franciscan manzanita at Fort Point, but a critical habitat area is mapped at this site. The LOD would include trails through critical habitat that are open to dog walking and the area adjacent to the trail up to 6 feet. Because dogs would be physically restrained on-leash on the trails, this alternative would provide relative protection for suitable habitat for the Franciscan manzanita, as impacts in the LOD would be small compared to the entire site. Overall, assuming compliance with regulations, alternative F would result in negligible impacts on the Franciscan manzanita. No measurable or perceptible changes are anticipated to occur to critical Franciscan manzanita habitat, and on-leash dog walking on trails is not expected to preclude the introduction of the species to the site.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs on leash per person with no permit required. Fort Point is not one of the park sites where permits would be issued allowing dog walkers to have more than three dogs. Since commercial dog walking at Fort Point Promenade/Fort Point NHS Trails is not common, it is likely that commercial dog walking would have negligible impacts on the Franciscan manzanita.

Cumulative Impacts. Under alternative F, the cumulative impacts on potential Franciscan manzanita habitat at Fort Point would be the same as those under alternative B: negligible.

Improvements are being made to Fort Point facilities to improve visitor accessibility (NPS 2010g, 1). The Doyle Drive replacement project will replace the 73-year-old Doyle Drive and make structural and seismic improvements that will take place on lands in Area B of the Presidio (USDOT 2009, 1; Presidio Parkway 2010, 1). This project has the potential to adversely affect Franciscan manzanita habitat at Fort Point through construction and project work in areas that may provide potential habitat for Franciscan manzanita. This could limit the success of potential introduction of this species at the site. The PTMP includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures. The PTMP would be beneficial for the Franciscan manzanita because these projects may improve or expand potential habitat for the species.

FORT POINT PREFERRED ALTERNATIVE F CONCLUSION TABLE

Franciscan Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Franciscan manzanita	Beneficial, assuming compliance	Negligible cumulative impacts

Baker Beach and Bluffs to Golden Gate Bridge

Alternative A: No Action. Currently dogs are allowed under voice control on the beach north of Lobos creek and on-leash on all trails except the Batteries to Bluffs Trail. Baker Beach and the bluffs to the Golden Gate Bridge experience low to moderate visitor use by visitors with dogs (table 10). Baker Beach does not have a known occurrence of the Franciscan manzanita, but a critical habitat area has been mapped for this species at the site (USFWS 2012, 54530). Dog presence at this site could inhibit the successful introduction of the Franciscan manzanita to Baker Beach. Off-leash dogs on the beach are not anticipated to impact the Franciscan manzanita habitat, which is found above the bluffs in vegetated chaparral shrub areas with serpentine soils.

If off-leash dogs were able to access these areas, they could affect the habitat for the Franciscan manzanita through trampling, digging, or dog waste. Additionally, dogs on-leash may adversely impact on-leash trails and the area adjacent to the trail up to 6 feet. Such impacts may limit the successful introduction of individuals into this critical habitat. This critical habitat is crossed by several trails including the Dune Trail and Battery Crosby Trail. Under on-leash dog walking, impacts to soils and habitat would be limited to the trails and the 6-foot corridor immediately adjacent to the trail, and impacts would be localized to a relatively small area when compared to the whole site, whereas impacts from off-leash dogs would be concentrated on the beach where voice control is allowed, but may also occur from noncompliance on the entire site. Overall, dog walking under alternative A would have long-term minor adverse impacts on Franciscan manzanita habitat.

There is no permit system for commercial dog walking under alternative A. At Baker Beach and Bluffs to Golden Gate Bridge, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the Franciscan manzanita habitat.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on Franciscan manzanita habitat at or in the vicinity of this site.

Urbanization, development, and loss of habitat are past actions that have impacted the Franciscan manzanita. Other factors include loss of habitat continuity, the establishment and overall dominance by non-native plant species, and land management practices including placement of roads and trails for park users. In particular, urban development and landscaping have reduced the available habitat for these species, with the gradual creation of islands of intact vegetation surrounded by infrastructure and associated non-native species. Populations of rare plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival.

Current transportation, trail, and development planning efforts in GGNRA and beyond NPS-managed boundaries would have direct short-term effects on special-status plant species in the disturbance area, and long-term direct and indirect effects on vegetation as a whole through potential creation of habitat (through ground-disturbing activities) for non-native plant species encroachment and establishment. However, ongoing efforts to identify mitigation for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would reduce the potential for these types of impacts. Since special-status plants are mapped and monitored on a regular basis and are considered during site design and avoided wherever possible, these impacts would be minor to negligible. Other ongoing programs, including non-native plant removal projects in the park, habitat restoration programs, volunteer opportunities sponsored by the park, and maintenance operations all have the potential to affect listed plant species at GGNRA. The Wildland/Urban Interface Initiative projects on private lands and lands managed by other agencies adjacent to GGNRA-managed lands, the GGNRA *Fire Management Plan* (NPS 2005b), and the vegetation management plan for the Presidio would beneficially affect the park's vegetation and associated listed plant species, including the Franciscan manzanita. Additionally, park stewardship programs, which include native plant habitat restoration projects that occur throughout the park, will provide beneficial effects to the Franciscan manzanita.

The Franciscan manzanita is located in a few isolated areas throughout San Francisco, but critical habitat has been designated in areas that provide the conditions suitable for this species. The Franciscan manzanita was believed to be extinct in the wild until a population was found, and the only known specimen occurs in the Presidio Area B. Critical habitat for this species can be found along the vegetated areas of Baker Beach and the Bluffs to Golden Gate Bridge. In addition, under the PTMP for the Presidio, habitat for rare and unique plant and wildlife species will be protected and enhanced (Presidio Trust 2002, 4) which would have a long-term beneficial impact to the Franciscan manzanita.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Baker Beach and Bluffs to Golden Gate Bridge is uncommon. However, the interim compendium amendment could have a slight beneficial effect on Franciscan manzanita critical habitat by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and nutrient addition from dog waste.

The long-term minor adverse impacts on suitable Franciscan manzanita habitat from dogs at Baker Beach and Bluffs to Golden Gate Bridge were considered together with the effects of the projects mentioned above. The anticipated beneficial effects from the PTMP program, other habitat restoration efforts, and

the interim permitting program should reduce the adverse impacts on Franciscan manzanita habitat from alternative A. Therefore, cumulative impacts on Franciscan manzanita under alternative A are anticipated to be negligible.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

Franciscan Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Off-leash and on-leash dogs could affect suitable habitat for Franciscan manzanita through digging, trampling, and dog waste	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Similar to alternative A, alternative B would allow on-leash dog walking on all trails except the Batteries to Bluffs Trail and Battery Crosby Trail, which would be closed to dog walking. On-leash dog walking would be allowed on the beach.

Currently Franciscan manzanita does not occur at Baker Beach, but there is a critical habitat area mapped at this site. This critical habitat is crossed by several trails including the Dune Trail, which would be open to dog walking under alternative B. Because dogs would be physically restrained on leash on trails open to dog walking, this alternative would provide relative protection for suitable habitat for the Franciscan manzanita because impacts in the LOD would be small compared to the entire site. Overall, assuming compliance with regulations, alternative B would result in negligible impacts on the Franciscan manzanita. No measurable or perceptible changes are anticipated to occur to critical Franciscan manzanita habitat, and on-leash dog walking on trails is not expected to preclude the introduction of the species to the site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on the Franciscan manzanita.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on Franciscan manzanita habitat at or in the vicinity of this site.

Urbanization, development, and loss of habitat are past actions that have impacted the Franciscan manzanita. Other factors include loss of habitat continuity, the establishment and overall dominance by non-native plant species, and land management practices including placement of roads and trails for park users. In particular, urban development and landscaping have reduced the available habitat for these species, with the gradual creation of islands of intact vegetation surrounded by infrastructure and associated non-native species. Populations of rare plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival.

Current transportation, trail, and development planning efforts in GGNRA and beyond NPS-managed boundaries would have direct short-term effects on special-status plant species in the disturbance area, and long-term direct and indirect effects on vegetation as a whole through potential creation of habitat (through ground-disturbing activities) for non-native plant species encroachment and establishment. However, ongoing efforts to identify mitigation for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would reduce the potential for these types of impacts. Since special-status plants are mapped and monitored on a regular basis and are considered during site design and avoided wherever possible, these impacts would be minor to negligible. Other ongoing programs, including non-native plant removal projects in the park, habitat restoration programs, volunteer opportunities sponsored by the park, and maintenance operations all have the potential to affect listed plant species at GGNRA. The Wildland/Urban Interface Initiative projects on private lands and lands managed by other agencies adjacent to GGNRA-managed lands, the GGNRA *Fire Management Plan* (NPS 2005b), and the vegetation management plan for the Presidio would beneficially affect the park's vegetation and associated listed plant species, including the Franciscan manzanita. Additionally, park stewardship programs, which include native plant habitat restoration projects that occur throughout the park, will provide beneficial effects to the Franciscan manzanita.

The Franciscan manzanita is located in a few isolated areas throughout San Francisco, but critical habitat has been designated in areas that provide the conditions suitable for this species. The Franciscan manzanita was believed to be extinct in the wild until a population was found, and the only known specimen occurs in the Presidio Area B. Critical habitat for this species can be found along the vegetated areas of Baker Beach and the Bluffs to Golden Gate Bridge. In addition, under the PTMP for the Presidio, habitat for rare and unique plant and wildlife species will be protected and enhanced (Presidio Trust 2002, 4) which would have a long-term beneficial impact to the Franciscan manzanita.

The negligible impacts on suitable Franciscan manzanita habitat from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative B were considered together with the beneficial effects of the projects mentioned above. The anticipated beneficial effects from the PTMP with the negligible impacts on the Franciscan manzanita habitat from alternative B would result in beneficial cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION TABLE

Franciscan Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Franciscan manzanita	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed on the same trails and on the beach, in the same as alternative B. Impacts on the Franciscan manzanita would also be the same: negligible, with beneficial cumulative impacts.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs with a limit of six dogs on leash, and permits may be restricted by time and area. Permits would be allowed at Baker Beach. Impacts on the Franciscan manzanita from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not

have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the Franciscan manzanita.

Cumulative Impacts. The negligible impacts on suitable Franciscan manzanita habitat from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative C were considered together with the effects of the projects mentioned above under alternative B. The anticipated beneficial effects from the PTMP and other restoration projects and the negligible impacts from alternative C would result in beneficial cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION TABLE

Franciscan Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Franciscan manzanita	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would only be allowed on the beach south of the north end of the North Parking Lot, on the trails to the beach south of the north end of the North Parking Lot, and on the Coastal Trail.

Although the beach does not provide habitat for the Franciscan manzanita, the trails to the beach would traverse critical habitat for the Franciscan manzanita. Impacts to Franciscan manzanita habitat would be limited to the trails and the 6-foot corridor immediately adjacent to the trails. The impacts would be negligible because restraining dogs on-leash on the trails through critical habitat would restrict impacts to a relatively small region when compared to the whole site. Impacts in the LOD would occur as a result of disturbance by dogs through trampling, dog waste, and nutrient addition, but these impacts would be localized in a relatively small area. Overall, impacts would be negligible, assuming compliance under alternative D, because no measurable or perceptible changes in Franciscan manzanita habitat would be expected. On-leash dog walking on the trails is not expected to preclude the introduction of the species to the site.

No commercial dog walking would be allowed under alternative D. Private dog walkers would be allowed up to three dogs. Commercial dog walking from this site would have negligible impacts on Franciscan manzanita habitat.

Cumulative Impacts. Under alternative D, the cumulative impacts on Franciscan manzanita at Baker Beach and Bluffs to Golden Gate Bridge would be the same as those under alternative B: beneficial.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION TABLE

Franciscan Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Franciscan manzanita	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Under alternative E there would be a VSCA for off-leash dog walking on the beach south of the north end of the North Parking Lot.

On-leash dog walking would be allowed on the beach north of the north end of the North Parking Lot and on all trails except the Batteries to Bluffs trail and Battery Crosby Trail, which would be closed to dog walking.

Currently Franciscan manzanita does not occur at Baker Beach, but there is a critical habitat area mapped at this site. This critical habitat is crossed by several trails including the Dune Trail and the trails to the beach, which would be open to dog walking under alternative E. Impacts to Franciscan manzanita habitat would be limited to the trails and the 6-foot corridors immediately adjacent to the trails because all dog walking on trails would be on leash. The impacts would be negligible because restraining dogs on leash on trails through the critical habitat would restrict impacts to a relatively small region when compared to the whole site. Impacts in the LOD would occur as a result of disturbance by dogs through trampling, dog waste, and nutrient addition, but these impacts would be localized in a relatively small area. The VSCA at Baker Beach under alternative E is adjacent to Franciscan manzanita habitat, but does not contain any habitat suitable for the species. Assuming compliance under alternative E, dogs would not access this suitable habitat adjacent to the VSCA. Overall, impacts to the Franciscan manzanita habitat at Baker Beach would be negligible, assuming compliance under alternative E. Additionally on-leash dog walking on the trails is not expected to preclude the introduction of the species to the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed for Baker Beach. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on Franciscan manzanita habitat.

Cumulative Impacts. Under alternative E, the cumulative impacts on Franciscan manzanita at this site would be the same as those under alternative B: beneficial.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION TABLE

Franciscan Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Franciscan manzanita; assuming compliance, dogs in VSCA would not access adjacent habitat that could support the Franciscan manzanita	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the section of Baker Beach north of Baker Beach Access Trail #2 and on the beach access trails leading to that section of beach, as well as on the Coastal Trail. Dogs would be prohibited in the section of beach south of the north parking lot (approximately half of the beach) and on the trails leading to the southern section of beach and on the Dune, Batteries to Bluffs, and Battery Crosby trails.

Although the beach does not provide habitat for the Franciscan manzanita, the trails to the beach would traverse critical habitat for the Franciscan manzanita. Impacts to Franciscan manzanita habitat would be limited to the trails and the 6-foot corridor immediately adjacent to the trails. The impacts would be

negligible because restraining dogs on-leash on the trails through critical habitat would restrict impacts to a relatively small region when compared to the whole site. Impacts in the LOD would occur as a result of disturbance by dogs through trampling, dog waste, and nutrient addition, but these impacts would be localized in a relatively small area. Overall, impacts would be negligible, assuming compliance under alternative F, because no measurable or perceptible changes in Franciscan manzanita habitat would be expected. Additionally, on-leash dog walking on the trails is not expected to preclude the introduction of the species to the site.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Baker Beach, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Walking four to six dogs with an NPS-issued permit would be limited to the north parking lot, Baker Beach Access Trail #2, and the beach north of the trail. Permits could further restrict use by time and area. Since commercial dog walking is not common at Baker Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on Franciscan manzanita habitat.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on Franciscan manzanita habitat at or in the vicinity of this site.

Urbanization, development, and loss of habitat are past actions that have impacted the Franciscan manzanita. Other factors include loss of habitat continuity, the establishment and overall dominance by non-native plant species, and land management practices including placement of roads and trails for park users. In particular, urban development and landscaping have reduced the available habitat for these species, with the gradual creation of islands of intact vegetation surrounded by infrastructure and associated non-native species. Populations of rare plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival.

Current transportation, trail, and development planning efforts in GGNRA and beyond NPS-managed boundaries would have direct short-term effects on special-status plant species in the disturbance area, and long-term direct and indirect effects on vegetation as a whole through potential creation of habitat (through ground-disturbing activities) for non-native plant species encroachment and establishment. However, ongoing efforts to identify mitigation for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would reduce the potential for these types of impacts. Since special-status plants are mapped and monitored on a regular basis and are considered during site design and avoided wherever possible, these impacts would be minor to negligible. Other ongoing programs, including non-native plant removal projects in the park, habitat restoration programs, volunteer opportunities sponsored by the park, and maintenance operations all have the potential to affect listed plant species at GGNRA. The Wildland/Urban Interface Initiative projects on private lands and lands managed by other agencies adjacent to GGNRA-managed lands, the GGNRA *Fire Management Plan* (NPS 2005b), and the vegetation management plan for the Presidio would beneficially affect the park's vegetation and associated listed plant species, including the Franciscan manzanita. Additionally, park stewardship programs, which include native plant habitat restoration projects that occur throughout the park, will provide beneficial effects to the Franciscan manzanita.

The Franciscan manzanita is located in a few isolated areas throughout San Francisco, but critical habitat has been designated in areas that provide the conditions suitable for this species. The Franciscan manzanita was believed to be extinct in the wild until a population was found, and the only known specimen occurs in the Presidio Area B. Critical habitat for this species can be found along the vegetated areas of Baker Beach and the Bluffs to Golden Gate Bridge. In addition, under the PTMP for the Presidio, habitat for rare and unique plant and wildlife species will be protected and enhanced (Presidio Trust 2002, 4) which would have a long-term beneficial impact to the Franciscan manzanita.

Under alternative F, the cumulative impacts on Franciscan manzanita at this park site would be the same as those under alternative B: beneficial. The negligible impacts on suitable Franciscan manzanita habitat from dogs at Baker Beach and the Bluffs to Golden Gate Bridge under alternative F were considered together with the beneficial effects of the projects mentioned above. The anticipated beneficial effects from the PTMP with the negligible impacts on the Franciscan manzanita habitat from alternative F would result in beneficial cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

Franciscan Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Franciscan manzanita	Beneficial, assuming compliance	Beneficial cumulative impacts

IMPACTS TO PRESIDIO (RAVEN'S) MANZANITA (FEDERALLY AND STATE ENDANGERED) BY SITE AND ALTERNATIVE

The only known single natural surviving individual of Presidio manzanita occurs on a small portion of a 0.6-acre serpentine outcrop in the general vicinity of the WW II Memorial in Area B of the Presidio (USFWS 1984). Clones from this plant have been introduced in several places in the adjacent area and across Lincoln Boulevard in Area B of the Presidio, near Baker Beach in suitable serpentine coastal prairie habitat (Presidio Trust 2002, 99).

Baker Beach and Bluffs to Golden Gate Bridge

Alternative A: No Action. Under current conditions, dogs are allowed under voice control on the beach north of Lobos Creek and on-leash dog walking is allowed on the trails to the beach and on the Battery Crosby Trail; the Batteries to Bluffs Trail is closed to dog walking. This site has documented low to high visitor use, including low to moderate use by dog walkers (table 10). Additionally, in some areas at this site, dogs and their owners/walkers have created a myriad of social trails in serpentine coastal prairie habitat. At Baker Beach, clones of the plant species exist in the vicinity of the Coastal Trail (midway to the Golden Gate Bridge). Currently, this trail is not heavily used but is located immediately adjacent to the road and some off-leash dog use occurs in the area of the clones despite these conditions. Additionally, as part of a future project, the widening of the Coastal Trail may increase the impacts from off-leash dogs on the clones. As a result of alternative A, the near-future changes, and the current level of off-leash dog use in the area, dogs could affect the Presidio manzanita through frequent trampling, digging, or dog waste, and planted clones of this species could be injured or killed. Therefore, this alternative would result in continued long-term moderate adverse impacts on the Presidio manzanita. Impacts associated with dog use preclude the NPS from protecting the habitat; these impacts also prevent any future reintroductions of clones or seedling plants of this species at Baker Beach and Bluffs to Golden Gate Bridge, and the reproductive success of clones of this species may be affected by dogs.

Under alternative A, no permit system exists for commercial dog walking. At Baker Beach and Bluffs to Golden Gate Bridge, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the Presidio manzanita.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the Presidio manzanita at or in the vicinity of this site.

A single natural clonal colony of Presidio manzanita remains on an ocean facing serpentine bedrock outcrop within a larger serpentine soil area near the WW II Memorial at the end of Kobbe Avenue in the Presidio, above Baker Beach, San Francisco (USFWS 2003, 61-62). A clone from this population was planted at another serpentine outcrop at Inspiration Point in the Presidio, off Arguello Boulevard (USFWS 2003, 62) but survival is currently unknown. The Golden Gate National Recreation Area has prepared a comprehensive vegetation management plan (NPS and Presidio Trust 2001), which proposed to increase protection and maintenance of the habitat of the clones at the WW II Memorial site and transplants introduced to other Presidio locations (USFWS 2003,75). In addition, symbolic fencing, interpretive signs, and improved coordination with road maintenance and other staff of the Golden Gate National Recreation Area reduced threats of trampling and accidental damage, which resulted in expansion of the clone in a generally healthy condition most years (USFWS 2003, 74).

Through park stewardship programs, the Coastal Trail alignment has been designed to stay at least 100 feet from any of the Presidio manzanita clones, which would provide long-term protection of this species. The Presidio Trust coordinates the PTMP activities with the USFWS to ensure that relevant Recovery Plans, including the Presidio manzanita, are effectively implemented (Presidio Trust 2002, 236), which would have a long-term beneficial impact to this plant species. Additionally, other GGNRA park stewardship programs, which include native plant habitat restoration projects, occur throughout the park. These programs are led by NPS natural resources staff and will provide beneficial effects to the Presidio manzanita. Off-leash impacts could increase if the Coastal Trail is widened in the future and receives more use.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Baker Beach and Bluffs to Golden Gate Bridge is uncommon. However, the interim compendium amendment could have a slight beneficial effect on Presidio manzanita by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and nutrient addition from dog waste. Additionally, the permitting could reduce direct physical harm of planted clones of this species.

The long-term moderate adverse impacts on the Presidio manzanita from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs, including plant habitat restoration, and the interim permitting program should reduce some of the adverse impacts on the Presidio manzanita from alternative A. Therefore, cumulative impacts on the Presidio manzanita under this alternative would be expected to be long term, minor, and adverse.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

Presidio (Raven's) Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Clones of this serpentine endemic plant exist in the vicinity of the Coastal Trail midway to the Golden Gate Bridge; off-trail dogs could affect this species although it exists in soil outcrops that are relatively inaccessible at the site; dogs could affect this plant by trampling, digging, or dog waste; the restored population is being affected and few individuals of the species exist at the site, so impacts could affect the reproductive success of the plant	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the beach north of Lobos Creek Inlet and on all trails in the vicinity of Baker Beach except the Batteries to Bluffs Trail and the Battery Crosby Trail, where no dog walking would be allowed. In general, impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails; the beach is not suitable habitat for the Presidio manzanita. Impacts on the Presidio manzanita adjacent to the trails (LOD area) would be long term, minor, and adverse since these areas contain naturally functioning soils that could support the growth of the Presidio manzanita. Impacts would occur as a result of disturbance by dogs through trampling or dog waste; nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area at Baker Beach and Bluffs to Golden Gate Bridge would affect only a portion of the entire site. Physically restraining dogs on leash would protect the Presidio manzanita, potential habitat and the restored population would be protected, and no measurable or perceptible changes in the Presidio manzanita would be expected at this site as a result of alternative B. Therefore, assuming compliance, alternative B would result in overall negligible impacts on the Presidio manzanita at Baker Beach and Bluffs to Golden Gate Bridge.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on the Presidio manzanita.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the Presidio manzanita at or in the vicinity of this site.

A single natural clonal colony of Presidio manzanita remains on an ocean facing serpentine bedrock outcrop within a larger serpentine soil area near the WW II Memorial at the end of Kobbe Avenue in the Presidio, above Baker Beach, San Francisco (USFWS 2003, 61-62). A clone from this population was planted at another serpentine outcrop at Inspiration Point in the Presidio, off Arguello Boulevard (USFWS 2003, 62) but survival is currently unknown. The Golden Gate National Recreation Area has

prepared a comprehensive vegetation management plan (NPS and Presidio Trust 2001), which proposed to increase protection and maintenance of the habitat of the clones at the WW II Memorial site and transplants introduced to other Presidio locations (USFWS 2003,75). In addition, symbolic fencing, interpretive signs, and improved coordination with road maintenance and other staff of the Golden Gate National Recreation Area reduced threats of trampling and accidental damage, which resulted in expansion of the clone in a generally healthy condition most years (USFWS 2003, 74).

Through park stewardship programs, the Coastal Trail alignment has been designed to stay at least 100 feet from any of the Presidio manzanita clones, which would provide long-term protection of this species. The Presidio Trust coordinates the PTMP activities with the USFWS to ensure that relevant Recovery Plans, including the Presidio manzanita, are effectively implemented (Presidio Trust 2002, 236), which would have a long-term beneficial impact to this plant species. Additionally, other GGNRA park stewardship programs, which include native plant habitat restoration projects, occur throughout the park. These programs are led by NPS natural resources staff and will provide beneficial effects to the Presidio manzanita. Off-leash impacts could increase if the Coastal Trail is widened in the future and receives more use.

The negligible impacts on the Presidio manzanita from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative B were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the park stewardship programs, including plant habitat restoration, combined with the negligible impacts on the Presidio manzanita under alternative B would be expected to result in beneficial cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION TABLE

Presidio (Raven's) Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect Presidio manzanita and potential habitat; the restored population would be protected	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs, and permits may be restricted by time and area. Permits would be allowed at Baker Beach. Impacts on the Presidio manzanita from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the Presidio manzanita.

Cumulative Impacts. The negligible impacts on the Presidio manzanita from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative C were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the park stewardship programs,

including plant habitat restoration, combined with the negligible impacts on the Presidio manzanita under alternative C would be expected to result in beneficial cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION TABLE

Presidio (Raven's) Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect Presidio manzanita and potential habitat; the restored population would be protected	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking on the section of the beach north of Lobos Creek and south of the northern parking lot and on all trails leading to the section of beach south of the northern parking lot. Dog walking would not be permitted on the Batteries to Bluffs Trail and the Battery Crosby Trail. In general, impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails; the beach is not suitable habitat for the Presidio manzanita. Impacts on the Presidio manzanita adjacent to the trails (LOD area) would be long term, minor, and adverse since these areas contain naturally functioning soils that could support the growth of the Presidio manzanita. Impacts would occur as a result of disturbance by dogs through trampling or dog waste; nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would affect only a portion of the entire site. Physically restraining dogs on leash would protect the Presidio manzanita and potential habitat, the restored population would be protected, and no measurable or perceptible changes in the Presidio manzanita would be expected at this site as a result of alternative D. Therefore, assuming compliance, alternative D would result in overall negligible impacts on the Presidio manzanita at Baker Beach and Bluffs to Golden Gate Bridge.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on the Presidio manzanita.

Cumulative Impacts. The negligible impacts on the Presidio manzanita from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative D were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the park stewardship programs, including plant habitat restoration, combined with the negligible impacts on the Presidio manzanita under alternative D would be expected to result in beneficial cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION TABLE

Presidio (Raven's) Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect Presidio manzanita and potential habitat; the restored population would be protected	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the northern portion of the beach and on all trails in the vicinity of Baker Beach except the Batteries to Bluffs Trail and the Battery Crosby Trail, where no dog walking would be allowed. A VSCA would be established on the beach between Lobos Creek and the north end of the north parking lot. This VSCA would not be located in suitable habitat for the Presidio manzanita; therefore, no impacts to the Presidio manzanita would occur within the VSCA. In general, impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails because the beach is not suitable habitat for the Presidio manzanita. Impacts on the Presidio manzanita adjacent to the trails (LOD area) would be long term, minor, and adverse since these areas contain naturally functioning soils that could support the growth of the Presidio manzanita. Impacts would occur as a result of disturbance by dogs through trampling or dog waste; nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area at Baker Beach and Bluffs to Golden Gate Bridge would affect only a portion of the entire site. Physically restraining dogs on leash would protect the Presidio manzanita and potential habitat, the restored population would be protected, and no measurable or perceptible changes in the Presidio manzanita would be expected at this site as a result of alternative D. Therefore, assuming compliance, alternative D would result in overall negligible impacts on the Presidio manzanita at Baker Beach and Bluffs to Golden Gate Bridge.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may have up to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Baker Beach. Impacts on the Presidio manzanita from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the Presidio manzanita.

Cumulative Impacts. The negligible impacts on the Presidio manzanita from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the park stewardship programs, including plant habitat restoration, combined with the negligible impacts on the Presidio manzanita under alternative E would be expected to result in beneficial cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION TABLE

Presidio (Raven's) Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect Presidio manzanita and potential habitat; the restored population would be protected	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the section of Baker Beach north of Baker Beach Access Trail #2 and on the beach access trails leading to that section of beach, as well as on the Coastal Trail. No dog walking would be permitted on the southern section of the beach, on trails leading to that section of beach, or on the Dune, Batteries to Bluffs, or

Battery Crosby trails. In general, impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails; the beach is not suitable habitat for the Presidio manzanita. Impacts on the Presidio manzanita adjacent to the trails (LOD area) would be long term, minor, and adverse since these areas contain naturally functioning soils that could support the growth of the Presidio manzanita. Impacts would occur as a result of disturbance by dogs through trampling or dog waste; nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area at Baker Beach and Bluffs to Golden Gate Bridge would affect only a portion of the entire site. Physically restraining dogs on leash would protect the Presidio manzanita and potential habitat, the restored population would be protected, and no measurable or perceptible changes in the Presidio manzanita would be expected at this site as a result of the preferred alternative. Therefore, assuming compliance, the preferred alternative would result in overall negligible impacts on the Presidio manzanita at Baker Beach and Bluffs to Golden Gate Bridge.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. At Baker Beach, walking four to six dogs with an NPS-issued permit would be limited to the north parking lot, Baker Beach Access Trail #2, and the beach north of the trail. Permits could further restrict use by time and area. Impacts on the Presidio manzanita from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the Presidio manzanita.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the Presidio manzanita at or in the vicinity of this site.

Through park stewardship programs, the Coastal Trail alignment has been designed to stay at least 100 feet from any of the Presidio manzanita clones, which would provide long-term protection of this species. The Presidio Trust coordinates the PTMP activities with the USFWS to ensure that relevant Recovery Plans, including the Presidio manzanita, are effectively implemented (Presidio Trust 2002, 236), which would have a long-term beneficial impact to this plant species. Additionally, other GGNRA park stewardship programs, which include native plant habitat restoration projects, occur throughout the park. These programs are led by NPS natural resources staff and will provide beneficial effects to the Presidio manzanita. Trail widening and improvements could increase the occurrence of off-leash dog impacts.

The negligible impacts on the Presidio manzanita from dogs at Baker Beach and Bluffs to Golden Gate Bridge under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs, including plant habitat restoration, combined with the negligible impacts on the Presidio manzanita under the preferred alternative would be expected to result in beneficial cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

Presidio (Raven's) Manzanita Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect Presidio manzanita and potential habitat; the restored population would be protected	Beneficial, assuming compliance	Beneficial cumulative impacts

IMPACTS TO PRESIDIO CLARKIA (FEDERALLY ENDANGERED) BY SITE AND ALTERNATIVE

This plant species inhabits serpentine soils around 50 meters in elevation (Jepson Interchange 2013). This species can be found in coastal scrub, and grasslands in valleys and foothills. The Presidio clarkia is endemic to California in San Francisco and Alameda counties. There are only five known occurrences, including one population in the Presidio (Area B, outside GGNRA) and one in Baker Beach, near the Coastal Trail.

Baker Beach and Bluffs to Golden Gate Bridge

Alternative A: No Action. Currently dogs are allowed under voice control on the beach north of Lobos Creek, and on leash on all trails except the Batteries to Bluffs Trail. Baker Beach and the bluffs to the Golden Gate Bridge experience low to moderate visitor use by visitors with dogs (table 10). A population of Presidio clarkia exists on a steep bluff alongside a popular trail. The presence of dogs, particularly off-leash dogs, could result in adverse impacts to this species.

If off-leash dogs were able to access this area, they could affect the Presidio clarkia through trampling, digging, or dog waste. Because the occurrence of Presidio clarkia is alongside a trail, on-leash dogs may impact plants within a close distance of the trail. Overall, dog walking under alternative A would have long-term moderate adverse impacts on the Presidio clarkia.

Under alternative A, there is no permit system for commercial dog. At Baker Beach and Bluffs to Golden Gate Bridge, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the Presidio clarkia.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the Presidio clarkia at the site, as well as effects on potential habitat at or in the vicinity of this site.

The Presidio clarkia has been impacted by urbanization, development, and loss of habitat. Other factors include loss of habitat continuity, the establishment and overall dominance by non-native plant species, and land management practices including placement of roads and trails for park users. In particular, urban development and landscaping have reduced the available habitat for these species, with the gradual creation of islands of intact vegetation surrounded by infrastructure and associated non-native species. Populations of rare plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival.

Current transportation, trail, and development planning efforts in GGNRA and beyond NPS-managed boundaries would have direct short-term effects on special-status plant species in the disturbance area, and long-term direct and indirect effects on vegetation as a whole through potential creation of habitat (through ground-disturbing activities) for non-native plant species encroachment and establishment. However, ongoing efforts to identify mitigation for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would reduce the potential for these types of impacts. Since special-status plants are mapped and monitored on a regular basis and are considered during site design and avoided wherever possible, these impacts would be minor to negligible. Other ongoing programs, including non-native plant removal projects in the park, habitat restoration programs, volunteer opportunities sponsored by the park, and maintenance operations all have the potential to affect listed plant species at GGNRA. The Wildland/Urban Interface Initiative projects on private lands and lands managed by other agencies adjacent to GGNRA-managed lands, the GGNRA *Fire Management Plan* (NPS 2005b), and the vegetation management plan for the Presidio would beneficially affect vegetation at the park and listed plant species, including the Presidio clarkia. Additionally, park stewardship programs, which include native plant habitat restoration projects that occur throughout the park, will provide beneficial effects to the Presidio clarkia.

Many of the known occurrences of the Presidio clarkia are within the Presidio Area B. Under the PTMP for the Presidio, habitat for rare and unique plant and wildlife species will be protected and enhanced (Presidio Trust 2002, 4) which would have a long-term beneficial impact to the Presidio clarkia.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Baker Beach and Bluffs to Golden Gate Bridge is uncommon. However, the interim compendium amendment could have a slight beneficial effect on Presidio clarkia by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and nutrient addition from dog waste. Additionally, the permitting could reduce direct physical harm to plants.

The long-term, moderate adverse impacts on the Presidio clarkia from dogs at Baker Beach and Bluffs to Golden Gate Bridge were considered together with the effects of the projects mentioned above. The anticipated beneficial effects from the PTMP program, other habitat restoration efforts, and the interim permitting program should reduce the adverse impacts on the Presidio clarkia from alternative A. Therefore, cumulative impacts on Presidio clarkia under alternative A are anticipated to be long-term, minor, and adverse.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

Presidio Clarkia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Off-leash and on-leash dogs could affect the known population of Presidio clarkia located adjacent to the Coastal Trail through digging, trampling, and dog waste	N/A	Long-term, minor, adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Similar to alternative A, alternative B would allow on-leash dog walking on all trails except the Batteries to Bluffs Trail and Battery Crosby Trail, which would be closed to dog walking. On-leash dog walking would be allowed on the beach.

A known occurrence of the Presidio clarkia is located adjacent to the Coastal Trail, which would be open to on-leash dog walking under alternative B. The LOD would include trails open to dog walking, and an area adjacent to the trail up to 6 feet. Although dogs would be physically restrained on leash, they may still impact the Presidio clarkia population alongside the trail through trampling and dog waste. These impacts are expected to be less than impacts from off-leash dogs as described above for alternative A. Overall, assuming compliance with regulations, alternative B would result in long-term minor adverse impacts on the Presidio clarkia.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on the Presidio clarkia.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the Presidio clarkia at the site, as well as effects on potential habitat at or in the vicinity of this site.

The Presidio clarkia has been impacted by urbanization, development, and loss of habitat. Other factors include loss of habitat continuity, the establishment and overall dominance by non-native plant species, and land management practices including placement of roads and trails for park users. In particular, urban development and landscaping have reduced the available habitat for these species, with the gradual creation of islands of intact vegetation surrounded by infrastructure and associated non-native species. Populations of rare plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival.

Current transportation, trail, and development planning efforts in GGNRA and beyond NPS-managed boundaries would have direct short-term effects on special-status plant species in the disturbance area, and long-term direct and indirect effects on vegetation as a whole through potential creation of habitat (through ground-disturbing activities) for non-native plant species encroachment and establishment. However, ongoing efforts to identify mitigation for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would reduce the potential for these types of impacts. Since special-status plants are mapped and monitored on a regular basis and are considered during site design and avoided wherever possible, these impacts would be minor to negligible. Other ongoing programs, including non-native plant removal projects in the park, habitat restoration programs, volunteer opportunities sponsored by the park, and maintenance operations all have the potential to affect listed plant species at GGNRA. The Wildland/Urban Interface Initiative projects on private lands and lands managed by other agencies adjacent to GGNRA-managed lands, the GGNRA *Fire Management Plan* (NPS 2005b), and the vegetation management plan for the Presidio would beneficially affect vegetation at the park and listed plant species, including the Presidio clarkia. Additionally, park stewardship programs, which include native plant habitat restoration projects that occur throughout the park, will provide beneficial effects to the Presidio clarkia.

Many of the known occurrences of the Presidio clarkia are within the Presidio Area B. Under the PTMP for the Presidio, habitat for rare and unique plant and wildlife species will be protected and enhanced (Presidio Trust 2002, 4) which would have a long-term beneficial impact to the Presidio clarkia.

The negligible impacts on the Presidio clarkia from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative B were considered together with the beneficial effects of the projects mentioned above. The anticipated beneficial effects from the PTMP combined with the long-term minor adverse on the Presidio clarkia from alternative B would result in negligible cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION TABLE

Presidio Clarkia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term, minor adverse impacts, assuming compliance	Physically restraining dogs on leash would limit dog impacts on the Presidio clarkia, but dogs may still impact the population along the Coastal Trail from trampling and dog waste	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed on the same trails as in alternative B and impacts on the Presidio clarkia would also be the same: long-term, minor, adverse impacts on Presidio clarkia and negligible cumulative impacts.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs with a limit of six dogs on leash, and permits may be restricted by time and area. Permits would be allowed only on the beach at Baker Beach. Since commercial dog walking is not common at Baker Beach and permit holders would only be allowed on the beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the Presidio clarkia.

Cumulative Impacts. The long-term minor adverse impacts to the Presidio clarkia from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative C were considered together with the effects of the projects mentioned above under alternative B. The anticipated beneficial effects from the PTMP and other restoration projects and the long-term minor adverse impacts from alternative C would result in negligible cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION TABLE

Presidio Clarkia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would limit dog impacts on the Presidio clarkia, but dogs may still impact the population along the Coastal Trail from trampling and dog waste	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would only be allowed on the beach south of the north end of the north parking lot, on the trails to the beach south of the north end of the north parking lot, and on the Coastal Trail.

A known occurrence of the Presidio clarkia is located adjacent to the Coastal Trail, which would be open to on-leash dog walking under alternative D. The LOD would include trails open to dog walking and an

area adjacent to the trail up to 6 feet. Although dogs would be physically restrained on leash, they may still impact the Presidio clarkia population alongside the trail through trampling and dog waste. Overall, assuming compliance with regulations, alternative D would result in long-term minor adverse impacts on the Presidio clarkia.

No commercial dog walking would be allowed under alternative D. Private dog walkers would be allowed up to three dogs. Commercial dog walking from this site would have negligible impacts on the Presidio clarkia.

Cumulative Impacts. Under alternative D, the cumulative impacts on Presidio clarkia at this park site would be the same as those under alternative B: negligible.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION TABLE

Presidio Clarkia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would limit dog impacts on the Presidio clarkia, but dogs may still impact the population along the Coastal Trail from trampling and dog waste	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Under alternative E, there would be a VSCA for off-leash dog walking on the beach south of the north end of the north parking lot. On-leash dog walking would be allowed on the beach north of the north end of the north parking lot, and on all trails except the Batteries to Bluffs trail and Battery Crosby Trail, which would be closed to dog walking.

A known occurrence of the Presidio clarkia is located adjacent to the Coastal Trail, which would be open to on-leash dog walking under alternative E. The LOD would include trails open to dog walking, and an area adjacent to the trail up to 6 feet. Although dogs would be physically restrained on leash, they may still impact the Presidio clarkia population alongside the trail through trampling and dog waste. Overall, assuming compliance with regulations, alternative E would result in long-term minor adverse impacts on the Presidio clarkia.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed only on the beach portion of Baker Beach. Since commercial dog walking is not common at Baker Beach and permit holders would only be allowed on the beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on Presidio clarkia habitat.

Cumulative Impacts. Under alternative E, the cumulative impacts on the Presidio clarkia at this park site would be the same as those under alternative B: negligible.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION TABLE

Presidio Clarkia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term, minor adverse impacts, assuming compliance	Physically restraining dogs on leash would limit dog impacts on the Presidio clarkia, but dogs may still impact the population along the Coastal Trail from trampling and dog waste	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the section of Baker Beach north of Baker Beach Access Trail #2 and on the beach access trails leading to that section of beach, as well as on the Coastal Trail Dogs would be prohibited in the section of beach south of the north parking lot (approximately half of the beach) and on the trails leading to the southern section of beach and on the Dune, Batteries to Bluffs, and Battery Crosby trails.

A known occurrence of the Presidio clarkia is located adjacent to the Coastal Trail, which would be open to on-leash dog walking under the preferred alternative. The LOD would include trails open to dog walking and an area adjacent to the trail up to 6 feet. Although dogs would be physically restrained on leash, they may still impact the Presidio clarkia population alongside the trail through trampling and dog waste. Overall, assuming compliance with regulations, the preferred alternative would result in long-term minor adverse impacts on the Presidio clarkia.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At Baker Beach, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits could restrict use by time and area. Since commercial dog walking is not common at Baker Beach, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the Presidio clarkia.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the Presidio clarkia at the site, as well as effects on potential habitat at or in the vicinity of this site.

The Presidio clarkia has been impacted by urbanization, development, and loss of habitat. Other factors include loss of habitat continuity, the establishment and overall dominance by non-native plant species, and land management practices including placement of roads and trails for park users. In particular, urban development and landscaping have reduced the available habitat for these species, with the gradual creation of islands of intact vegetation surrounded by infrastructure and associated non-native species. Populations of rare plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival.

Current transportation, trail, and development planning efforts in GGNRA and beyond NPS-managed boundaries would have direct short-term effects on special-status plant species in the disturbance area, and long-term direct and indirect effects on vegetation as a whole through potential creation of habitat (through ground-disturbing activities) for non-native plant species encroachment and establishment. However, ongoing efforts to identify mitigation for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would

reduce the potential for these types of impacts. Since special-status plants are mapped and monitored on a regular basis and are considered during site design and avoided wherever possible, these impacts would be minor to negligible. Other ongoing programs, including non-native plant removal projects in the park, habitat restoration programs, volunteer opportunities sponsored by the park, and maintenance operations all have the potential to affect listed plant species at GGNRA. The Wildland/Urban Interface Initiative projects on private lands and lands managed by other agencies adjacent to GGNRA-managed lands, the GGNRA *Fire Management Plan* (NPS 2005b), and the vegetation management plan for the Presidio would beneficially affect vegetation at the park and listed plant species, including the Presidio clarkia. Additionally, park stewardship programs, which include native plant habitat restoration projects that occur throughout the park, will provide beneficial effects to the Presidio clarkia.

Many of the known occurrences of the Presidio clarkia are within the Presidio Area B. Under the PTMP for the Presidio, habitat for rare and unique plant and wildlife species will be protected and enhanced (Presidio Trust 2002, 4) which would have a long-term beneficial impact to the Presidio clarkia.

Under alternative F, the cumulative impacts on the Presidio clarkia at this park site would be the same as those under alternative B: negligible. The long-term minor adverse impacts on the Presidio clarkia from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative F were considered together with the beneficial effects of the projects mentioned above under alternative A. The anticipated beneficial effects from the PTMP with the long-term minor adverse impacts on Presidio clarkia from alternative F would result in negligible cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

Presidio Clarkia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term, minor adverse impacts, assuming compliance	Physically restraining dogs on leash would limit dog impacts on the Presidio clarkia, but dogs may still impact the population along the Coastal Trail from trampling and dog waste	Beneficial, assuming compliance	Negligible cumulative impacts

IMPACTS TO MARIN DWARF-FLAX (FEDERALLY AND STATE THREATENED) BY SITE AND ALTERNATIVE

The Marin dwarf-flax is found in coastal serpentine prairie and scrub habitat in GGNRA as two subpopulations. One subpopulation is located west of Lincoln Boulevard of the Presidio and the other subpopulation is located in soil outcrops above Baker Beach, near the one remaining natural Presidio manzanita location (USFWS 2003; NPS 2008i).

Baker Beach and Bluffs to Golden Gate Bridge

Alternative A: No Action. Under current conditions, dogs are allowed under voice control on the beach north of Lobos Creek and on-leash dog walking is allowed on the trails to the beach and on the Battery Crosby Trail; the Batteries to Bluffs Trail is closed. This site has documented moderate low to high visitor use and low to moderate use by dog walkers (table 10). In some areas at this site, dogs and their owners/walkers have created a myriad of social trails in coastal vegetation.

This species exists in soil outcrops that are in the vicinity of the Coastal Trail midway to the Golden Gate Bridge. Under alternative A, on-leash dog walking could affect the Marin dwarf-flax and the sensitive serpentine habitat through trampling, digging, or dog waste; individuals of the species could be injured or killed. Therefore, this alternative would result in continued long-term moderate adverse impacts on the Marin dwarf-flax. Because few individuals of the species currently exist at the site, it is possible that impacts could affect the reproductive success of individuals of the species; therefore, impacts would be moderate.

No permit system exists for commercial dog walking under alternative A. At Baker Beach and Bluffs to Golden Gate Bridge, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the Marin dwarf-flax.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the Marin dwarf-flax at or in the vicinity of this site.

The Presidio supports populations of Marin dwarf-flax and the NPS has been actively managing the Presidio plant population since 1994 (USFWS 1998a, I-15-I-16). Annual censuses of the single population of Marin dwarf-flax have been conducted since 1994 and fencing was erected in 1995 to protect this largest population at the Presidio USFWS 1998a, I-15-I-16). The Presidio Trust coordinates the PTMP activities with the USFWS to ensure that relevant Recovery Plans, including the Marin dwarf-flax, are effectively implemented (Presidio Trust 2002, 236), which would have a long-term beneficial impact on this plant species.

The Presidio Coastal Trail project, invasive plant species control, park stewardship programs, volunteer opportunities sponsored by the park, and maintenance operations all have the potential to affect listed plant species at GGNRA. Efforts to manage this species are underway at the two subpopulations in GGNRA and the NPS is currently considering translocation of seed to suitable habitat areas in these subsites (NPS 2008i). Additionally, park stewardship programs, which include native plant habitat restoration projects, will provide beneficial effects to the Marin dwarf-flax.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Baker Beach and Bluffs to Golden Gate Bridge is uncommon. However, the interim compendium amendment could have a slight beneficial effect on Marin dwarf-flax and the sensitive serpentine habitat by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and nutrient addition from dog waste; the permitting could also reduce direct physical harm to plants.

The long-term moderate adverse impacts on the Marin dwarf-flax from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative A were considered together with the effects of the actions mentioned above. The benefits to the Marin dwarf-flax from the park stewardship programs, the Presidio Coastal Trail project, and the interim permitting program and invasive plant species control, should reduce some of the adverse impacts of this alternative. Therefore, the cumulative impacts under this alternative would be long term, minor, and adverse.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

Marin Dwarf-flax Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	This annual serpentine endemic plant exists in the vicinity of the Coastal Trail midway to the Golden Gate Bridge; off-trail dogs could affect this species by trampling, digging, or dog waste; individuals of the species could be injured or killed; few individuals of the species exist at the site, so reproductive success could be affected	N/A	Long-term minor adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the beach north of Lobos Creek Inlet and on all trails in the vicinity of Baker Beach except the Batteries to Bluffs Trail and the Battery Crosby Trail, where no dog walking would be allowed. In general, impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails; the beach is not suitable habitat for the Marin dwarf-flax. Impacts on the Marin dwarf-flax adjacent to the trails (LOD area) would be long term, minor, and adverse since these areas contain naturally functioning soils that could support the growth of the Marin dwarf-flax. Impacts would occur as a result of disturbance by dogs through trampling or dog waste; nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area at Baker Beach and Bluffs to Golden Gate Bridge would affect only a portion of the entire site, and the Marin dwarf-flax exists in soil outcrops that are relatively inaccessible at the site. Physically restraining dogs on leash would protect the Marin dwarf-flax and potential habitat, the restored population would be protected, and no measurable or perceptible changes in the Marin dwarf-flax would be expected at this site as a result of alternative B. Therefore, assuming compliance, alternative B would result in overall negligible impacts on the Marin dwarf-flax at Baker Beach and Bluffs to Golden Gate Bridge.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on the Marin dwarf-flax.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the Marin dwarf-flax at or in the vicinity of this site.

The Presidio supports populations of Marin dwarf-flax and the NPS has been actively managing the Presidio plant population since 1994 (USFWS 1998a, I-15-I-16). Annual censuses of the single population of Marin dwarf-flax have been conducted since 1994 and fencing was erected in 1995 to protect this largest population at the Presidio USFWS 1998a, I-15-I-16). The Presidio Trust coordinates the PTMP activities with the USFWS to ensure that relevant Recovery Plans, including the Marin dwarf-flax, are effectively implemented (Presidio Trust 2002, 236), which would have a long-term beneficial impact on this plant species.

The Presidio Coastal Trail project, invasive plant species control, park stewardship programs, volunteer opportunities sponsored by the park, and maintenance operations all have the potential to affect listed plant species at GGNRA. Efforts to manage this species are underway at the two subpopulations in GGNRA and the NPS is currently considering translocation of seed to suitable habitat areas in these subsites (NPS 2008i). Additionally, park stewardship programs, which include native plant habitat restoration projects, will provide beneficial effects to the Marin dwarf-flax.

The negligible impacts on the Marin dwarf-flax from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative B were considered together with the effects of the actions mentioned above. The benefits to the Marin dwarf-flax from the park stewardship programs and other actions combined with the negligible impacts from alternative B would result in negligible cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION TABLE

Marin Dwarf-flax Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect Marin dwarf-flax and potential habitat; the restored population would be protected	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs, and permits may restrict use by time and area. Permits would be issued for Baker Beach, but those permits would not include the trails in the area. Impacts on the Marin dwarf-flax from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the Marin dwarf-flax.

Cumulative Impacts. The negligible impacts on the Marin dwarf-flax from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative C were considered together with the effects of the actions mentioned above under alternative B. The benefits to the Marin dwarf-flax from the park stewardship programs and other actions combined with the negligible impacts from alternative C would result in negligible cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION TABLE

Marin Dwarf-flax Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect Marin dwarf-flax and potential habitat; the restored population would be protected	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking on the section of the beach north of Lobos Creek and south of the northern parking lot and on all trails leading to the section of Baker Beach south of the north parking lot and on the Coastal Trail. The Batteries to Bluffs and Battery Crosby trails would be closed to dog walking. In general, impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails; the beach is not suitable habitat for the Marin dwarf-flax. Impacts on the Marin dwarf-flax adjacent to the trails (LOD area) would be long term, minor, and adverse since these areas contain naturally functioning soils that could support the growth of the Marin dwarf-flax. Impacts would occur as a result of disturbance by dogs through trampling or dog waste; nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area at Baker Beach and Bluffs to Golden Gate Bridge would affect only a portion of the entire site, and the Marin dwarf-flax exists in soil outcrops that are relatively inaccessible at the site. Physically restraining dogs on leash would protect the Marin dwarf-flax and potential habitat, the restored population would be protected, and no measurable or perceptible changes in the Marin dwarf-flax would be expected at this site as a result of alternative D. Therefore, assuming compliance, alternative D would result in overall negligible impacts on the Marin dwarf-flax at Baker Beach and Bluffs to Golden Gate Bridge.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on the Marin dwarf-flax.

Cumulative Impacts. The negligible impacts on the Marin dwarf-flax from dogs at Baker Beach and Bluffs to Golden Gate Bridge were considered together with the effects of the actions mentioned above under alternative B. The benefits to the Marin dwarf-flax from the park stewardship programs and other actions combined with the negligible impacts from alternative D would result in negligible cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION TABLE

Marin Dwarf-flax Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect Marin dwarf-flax and potential habitat; the restored population would be protected	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the northern portion of the beach and on all trails in the vicinity of Baker Beach except the Batteries to Bluffs Trail and the Battery Crosby Trail, where no dog walking would be allowed. A VSCA would be established on the southern portion of the beach, immediately north of Lobos Creek, for dog walking under voice and sight control; this VSCA would not be located in suitable habitat for the Marin dwarf-flax. In general, impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails; the beach is not suitable habitat for the Marin dwarf-flax and therefore, no impacts would occur in the VSCA. Impacts on the Marin dwarf-flax adjacent to the trails (LOD area) would be long term, minor, and adverse since these areas contain naturally functioning soils that could support the growth of the Marin dwarf-flax. Impacts would occur as a result of disturbance by dogs through trampling or dog waste; nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area at Baker Beach and Bluffs to Golden Gate Bridge would affect only a portion of the entire site, and the Marin dwarf-flax exists in soil outcrops that are relatively inaccessible at the site. Physically restraining dogs on leash would protect the Marin dwarf-flax and potential habitat, the restored population would be protected, and no measurable or perceptible changes in the Marin dwarf-flax would be expected at this site as a result of alternative E. Therefore, assuming compliance, alternative E would result in overall negligible impacts on the Marin dwarf-flax at Baker Beach and Bluffs to Golden Gate Bridge.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may have up to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Baker Beach. Impacts on the Marin dwarf-flax from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the Marin dwarf-flax.

Cumulative Impacts. The negligible impacts on the Marin dwarf-flax from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative E were considered together with the effects of the actions mentioned above under alternative B. The benefits to the Marin dwarf-flax from the park stewardship programs and other actions combined with the negligible impacts from alternative E would result in negligible cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION TABLE

Marin Dwarf-flax Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect Marin dwarf-flax and potential habitat; the restored population would be protected	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the section of Baker Beach north of Baker Beach Access Trail #2 and on the beach access trails leading to that section of beach, as well as on the Coastal Trail. No dog walking would be allowed in the section of beach south of the north parking lot (approximately half of the beach), on the trails leading to the southern section of beach, or on the Dunes, Batteries to Bluffs, or Battery Crosby trails. In general, impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails; the beach is not suitable habitat for the Marin dwarf-flax. Impacts on the Marin dwarf-flax adjacent to the trails (LOD area) would be long term, minor, and adverse since these areas contain naturally functioning soils that could support the growth of the Marin dwarf-flax. Impacts would occur as a result of disturbance by dogs through trampling or dog waste; nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area at Baker Beach and Bluffs to Golden Gate Bridge would affect only a portion of the entire site, and the Marin dwarf-flax exists in soil outcrops that are relatively inaccessible at the site. Physically restraining dogs on leash would protect the Marin dwarf-flax and potential habitat, the restored population would be protected, and no measurable or

perceptible changes for the Marin dwarf-flax would be expected at this site as a result of the preferred alternative. Therefore, the preferred alternative would result in negligible impacts on the Marin dwarf-flax at Baker Beach and Bluffs to Golden Gate Bridge.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. At Baker Beach, walking four to six dogs with an NPS-issued permit would be limited to the north parking lot, Baker Beach Access Trail #2, and the beach north of the trail. Permits may further restrict use by time and area. Impacts on the Marin dwarf-flax from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the Marin dwarf-flax.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the Marin dwarf-flax at or in the vicinity of this site.

The Presidio Coastal Trail project, invasive plant species control, volunteer opportunities sponsored by the park, and maintenance operations all have the potential to affect listed plant species at GGNRA. Efforts to manage this species are underway at the two subpopulations in GGNRA and the NPS is currently considering translocation of seed to suitable habitat areas in these subsites (NPS 2008i). Additionally, park stewardship programs, which include native plant habitat restoration projects, will provide beneficial effects to the Marin dwarf-flax. The Presidio Trust coordinates the PTMP activities with the USFWS to ensure that relevant recovery plans, including plans to recover the Marin dwarf-flax, are effectively implemented (Presidio Trust 2002, 236), which would have a long-term beneficial impact to this plant species.

The negligible impacts on the Marin dwarf-flax from dogs at Baker Beach and Bluffs to Golden Gate Bridge under the preferred alternative were considered together with the effects of the actions mentioned above. The benefits to the Marin dwarf-flax from the park stewardship programs and other actions combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

Marin Dwarf-flax Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect Marin dwarf-flax and potential habitat; the restored population would be protected	Beneficial, assuming compliance	Negligible cumulative impacts

IMPACTS TO SAN FRANCISCO LESSINGIA (FEDERALLY AND STATE ENDANGERED) BY SITE AND ALTERNATIVE

The San Francisco lessingia currently exists at only six sites in the Presidio of San Francisco and one site in Daly City (USFWS 2003, iii), as two separate genotypes. There are two locations within GGNRA that historically supported the San Francisco lessingia. At one time, a population of the San Francisco lessingia "included the Lake Merced area, probably including areas now within the Fort Funston dune area immediately west of Lake Merced" (referred to as the historic southwestern San Francisco population) (USFWS 2003, 33). A historical population referred to as the northwestern San Francisco population existed from dunes "as far west as Baker Beach at the mouth of Lobos Creek" (USFWS 2003, 24). Due to the historic presence of the San Francisco lessingia at both Fort Funston and Baker Beach, specific locations within these GGNRA sites have been designated as San Francisco lessingia recovery and enhancement sites by USFWS (USFWS 2003, 128, 141). Although coastal dune habitat for this species exists at Fort Funston, there is no current documentation of existing presence of this species. The core population of the San Francisco lessingia is at the Lobos Creek Dune community in the Presidio. However, the Lobos Valley, where this population occurs at Lobos Creek in the GGNRA, is not in the study area for this final plan/EIS and this site is not discussed further in this section, with the exception of cumulative impacts analysis. Therefore, the impacts on the San Francisco lessingia are analyzed for Baker Beach and Bluffs to Golden Gate Bridge and for Fort Funston sites in the paragraphs that follow.

Baker Beach and Bluffs to Golden Gate Bridge

Alternative A: No Action. Under current conditions, dogs are allowed under voice control on the beach north of Lobos Creek and on-leash dog walking is allowed on the trails to the beach and on the Battery Crosby Trail; the Batteries to Bluffs Trail is closed. A small population of San Francisco lessingia is found in north Baker Beach. This population could be affected by dog use on the Coastal Trail. At the Baker Beach and Bluffs to Golden Gate Bridge site, there are designated reintroduction, restoration, and protection areas (recovery units) for the San Francisco lessingia (USFWS 2003). Due to the historic presence of the San Francisco lessingia at Baker Beach, specific locations within this site have been designated as San Francisco lessingia recovery and enhancement sites by USFWS (USFWS 2003, 128, 141). The recovery strategy for San Francisco lessingia is based on not only protecting and expanding the existing populations but also on the "active reintroduction and expansion of San Francisco lessingia in unoccupied, restored or enhanced habitat within its historic range" (USFWS 2003, 51).

The Presidio recovery unit for this species includes most of the trails in the area around Baker Beach, including part of the Coastal Trail and the Dune Trail (USFWS 2003). Portions of this unit are in and adjacent to areas where dogs under voice control are allowed. Additionally, social trails at the site traverse coastal scrub habitat that could support the San Francisco lessingia throughout this site. Vegetation along trails is particularly vulnerable to damage (Cole 1978, 281). Sensitive environments can be subject to physical disturbance by dogs (through digging or bed-making) and could damage vegetation and soils, with resulting influences on vegetation, soils, and wildlife such as small mammal populations (Sime 1999, 8.9). Additionally, it has been demonstrated that dog waste can affect sensitive soil and plant communities (USFWS 1998a, I-12). At the Baker Beach and Bluffs to Golden Gate Bridge site there is documented low to high visitor use, including low to moderate use by dog walkers (table 10). A total of 86 dog-related incidents were reported between 2008 and 2011 and 49 dog-related incidents between 2012 and 2016 (tables 22a and 22b).

Under alternative A, if dogs access areas of dune scrub vegetation in these regions, they could affect the San Francisco lessingia through trampling, digging, or dog waste. This could also affect the population in north Baker Beach since dogs are allowed on the Battery Crosby Trail. Therefore, alternative A would result in continued negligible to long-term moderate adverse impacts on the San Francisco lessingia.

No permit system exists for commercial dog walking under alternative A. At Baker Beach and Bluffs to Golden Gate Bridge, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the San Francisco lessingia.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Francisco lessingia at or in the vicinity of this site.

Primary among the past actions that have influenced listed plant species at GGNRA such as San Francisco lessingia are urban development and loss of habitat continuity, the establishment and overall dominance by non-native plant species, and land management practices including placement of roads and trails for park users. In particular, urban development and landscaping have reduced the available habitat for these species, with the gradual creation of islands of intact vegetation surrounded by infrastructure and associated non-native species. Populations of rare plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival.

Current transportation, trail, and development planning efforts in GGNRA and beyond NPS-managed boundaries would have direct short-term effects on special-status plant species in the disturbance area, and long-term direct and indirect effects on vegetation as a whole through potential creation of habitat (through ground-disturbing activities) for non-native plant species encroachment and establishment. However, ongoing efforts to identify mitigation for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would reduce the potential for these types of impacts. Since special-status plants are mapped and monitored on a regular basis and are considered during site design and avoided wherever possible, these impacts would be minor to negligible. Other ongoing programs, including non-native plant removal projects in the park, habitat restoration programs, volunteer opportunities sponsored by the park, and maintenance operations all have the potential to affect listed plant species at GGNRA. The Wildland/Urban Interface Initiative projects on private lands and lands managed by other agencies adjacent to GGNRA-managed lands, the GGNRA *Fire Management Plan* (NPS 2005b), and the vegetation management plan for the Presidio would beneficially affect the park's vegetation and associated listed plant species, including the San Francisco lessingia. Additionally, park stewardship programs, which include native plant habitat restoration projects that occur throughout the park, will provide beneficial effects to the San Francisco lessingia.

The San Francisco lessingia currently exists in only a few locations in San Francisco (the Presidio and Baker Beach as discussed above) and Daly City, California, as two separate genotypes. Specifically, the San Francisco lessingia exists at six sites in the Presidio (Area B) of San Francisco (USFWS 2003; iii), including Lobos Creek, the Battery Caulfield Road site, the Wherry Dunes restoration site, the Rob Hill site, the Presidio Golf Course roadside site and the Public Health Services Hospital sites) (USFWS 2003; 29-32). The entire northern San Francisco recovery area for this species is located within the Presidio (Presidio Trust 2002, 99). The NPS monitors the population sizes of San Francisco lessingia over time and has fenced off remnant populations on the Presidio to protect them from excessive trampling (USFWS 2003; 50). Generally, habitat loss, changes in ecological processes due to human development, and encroachment by invasive species are the primary reasons that the species is listed. However, the core San Francisco lessingia population exists in the Lobos Creek Valley restoration site (near Baker Beach and Bluffs to Golden Gate Bridge), where the population was between 154,065 and 231,097 individuals in 2008 (NPS 2008i). Through future restoration projects, and if the recovery areas for the species at Baker Beach and Bluffs to Golden Gate Bridge are adequately protected in the future, a beneficial effect

on the San Francisco lessingia would occur. In addition, under the PTMP for the Presidio, habitat for rare and unique plant and wildlife species will be protected and enhanced (Presidio Trust 2002, 4) which would have a long-term beneficial impact to the San Francisco lessingia. Specifically under the PTMP, the removal of Wherry Housing in the Presidio (Area B) would occur to support the recovery of the San Francisco lessingia, restore native dune scrub habitat, and increase open space (Presidio Trust 2002, 40).

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Baker Beach and Bluffs to Golden Gate Bridge is uncommon. However, the interim compendium amendment could have a slight beneficial effect on San Francisco lessingia by limiting the number of dogs commercial dog walkers could have at the site at one time, thus reducing the impacts from trampling, digging, and nutrient addition from dog waste; the permitting could also reduce direct physical harm to plants.

The negligible to long-term moderate adverse impacts on the San Francisco lessingia from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration projects, protected recovery areas, and the interim permitting program would not be expected to reduce the adverse impacts on the San Francisco lessingia from alternative A. Cumulatively, alternative A would have long-term minor to moderate adverse impacts on the San Francisco lessingia because the core San Francisco lessingia population exists in the Lobos Creek Valley restoration site (near Baker Beach and Bluffs to Golden Gate Bridge).

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

San Francisco Lessingia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term moderate adverse impacts	Dogs and their walkers have created social trails in habitat that supports a small population of this species at the site; portions of the recovery unit for this species are in and adjacent to areas where dogs under voice control are allowed; this plant could be disturbed by dogs since dogs are allowed on the trail to Battery Crosby near a small population of this plant; however, the Lobos Valley, where the core population of the plant occurs at GGNRA, is not in the study area for this final plan/EIS.	N/A	Long-term minor to moderate adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the beach north of Lobos Creek Inlet and on all trails in the vicinity of Baker Beach except the Batteries to Bluffs Trail and the Battery Crosby Trail, where dog walking would be prohibited. In general, impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails; the beach is not suitable habitat for the San Francisco lessingia. Impacts on the San Francisco lessingia adjacent to the trails (LOD area) would be long term, minor, and adverse since these areas contain naturally functioning soils that could support the growth of the San Francisco lessingia. Potential impacts on the current population in north Baker Beach would occur as a result of disturbance by dogs through trampling or dog waste, and nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area. The long-term minor adverse impacts from dogs in the LOD area would affect only

a portion of the entire site; however, the Presidio Recovery Unit for this species includes most of the trails in the area around Baker Beach, including part of the Coastal Trail as well as the Dune Trail (USFWS 2003). Physically restraining dogs on leash would protect San Francisco lessingia and potential habitat, but the Presidio Recovery Unit for the species is located in and adjacent to areas where on-leash dog walking would be allowed; dogs could affect the San Francisco lessingia population at north Baker Beach through trampling or dog waste; areas designated for further study and potential recovery of the San Francisco lessingia could also be affected by dogs. Therefore, assuming compliance, alternative B would result in overall negligible to long-term minor adverse impacts on the San Francisco lessingia because suitable habitat could occasionally be degraded by dogs at this site but effects would be localized in a relatively small area.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on the San Francisco lessingia.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Francisco lessingia at or in the vicinity of this site.

Primary among the past actions that have influenced listed plant species at GGNRA such as San Francisco lessingia are urban development and loss of habitat continuity, the establishment and overall dominance by non-native plant species, and land management practices including placement of roads and trails for park users. In particular, urban development and landscaping have reduced the available habitat for these species, with the gradual creation of islands of intact vegetation surrounded by infrastructure and associated non-native species. Populations of rare plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival.

Current transportation, trail, and development planning efforts in GGNRA and beyond NPS-managed boundaries would have direct short-term effects on special-status plant species in the disturbance area, and long-term direct and indirect effects on vegetation as a whole through potential creation of habitat (through ground-disturbing activities) for non-native plant species encroachment and establishment. However, ongoing efforts to identify mitigation for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would reduce the potential for these types of impacts. Since special-status plants are mapped and monitored on a regular basis and are considered during site design and avoided wherever possible, these impacts would be minor to negligible. Other ongoing programs, including non-native plant removal projects in the park, habitat restoration programs, volunteer opportunities sponsored by the park, and maintenance operations all have the potential to affect listed plant species at GGNRA. The Wildland/Urban Interface Initiative projects on private lands and lands managed by other agencies adjacent to GGNRA-managed lands, the GGNRA *Fire Management Plan* (NPS 2005b), and the vegetation management plan for the Presidio would beneficially affect the park's vegetation and associated listed plant species, including the San Francisco lessingia. Additionally, park stewardship programs, which include native plant habitat restoration projects that occur throughout the park, will provide beneficial effects to the San Francisco lessingia.

The San Francisco lessingia currently exists in only a few locations in San Francisco (the Presidio and Baker Beach as discussed above) and Daly City, California, as two separate genotypes. Specifically, the San Francisco lessingia exists at six sites in the Presidio (Area B) of San Francisco (USFWS 2003; iii), including Lobos Creek, the Battery Caulfield Road site, the Wherry Dunes restoration site, the Rob Hill site, the Presidio Golf Course roadside site and the Public Health Services Hospital sites) (USFWS 2003; 29-32). The entire northern San Francisco recovery area for this species is located within the Presidio (Presidio Trust 2002, 99). The NPS monitors the population sizes of San Francisco lessingia over time and has fenced off remnant populations on the Presidio to protect them from excessive trampling (USFWS 2003; 50). Generally, habitat loss, changes in ecological processes due to human development, and encroachment by invasive species are the primary reasons that the species is listed. However, the core San Francisco lessingia population exists in the Lobos Creek Valley restoration site (near Baker Beach and Bluffs to Golden Gate Bridge), where the population was between 154,065 and 231,097 individuals in 2008 (NPS 2008i). Through future restoration projects, and if the recovery areas for the species at Baker Beach and Bluffs to Golden Gate Bridge are adequately protected in the future, a beneficial effect on the San Francisco lessingia would occur. In addition, under the PTMP for the Presidio, habitat for rare and unique plant and wildlife species will be protected and enhanced (Presidio Trust 2002, 4) which would have a long-term beneficial impact to the San Francisco lessingia. Specifically under the PTMP, the removal of Wherry Housing in the Presidio (Area B) would occur to support the recovery of the San Francisco lessingia, restore native dune scrub habitat, and increase open space (Presidio Trust 2002, 40).

The negligible to long-term minor adverse impacts on the San Francisco lessingia from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration projects and protected recovery areas would not be expected to reduce the adverse impacts on the San Francisco lessingia from alternative B. Cumulatively, alternative B would have negligible to long-term minor adverse impacts on the San Francisco lessingia because the core San Francisco lessingia population exists in the Lobos Creek Valley restoration site (near Baker Beach and Bluffs to Golden Gate Bridge).

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION TABLE

San Francisco Lessingia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect San Francisco lessingia and potential habitat, but recovery and enhancement sites for the species are located in and adjacent to areas where on-leash dog walking would be allowed; dogs could affect the San Francisco lessingia through trampling or dog waste	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C dog walking restrictions would be the same as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible to long term, minor, and adverse overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs with a limit of six dogs on leash, and permits may be restricted by time and area. Permits would be allowed at Baker Beach. Impacts on the San Francisco lessingia from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is

not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on the San Francisco lessingia.

Cumulative Impacts. Under alternative C, the cumulative impacts at this park site would be the same as those under alternative B: negligible to long term, minor, and adverse.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION TABLE

San Francisco Lessingia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect San Francisco lessingia and potential habitat, but recovery and enhancement sites for the species are located in and adjacent to areas where on-leash dog walking would be allowed; dogs could affect the San Francisco lessingia through trampling or dog waste; individuals of the species could be injured or killed	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking on the section of the beach north of Lobos Creek and south of the northern parking lot and on all trails leading to the beach south of the northern parking lot. The Batteries to Bluffs Trail and the Battery Crosby Trail would be closed to dog walking. In general, impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails; the beach is not suitable habitat for the San Francisco lessingia. Impacts on the San Francisco lessingia adjacent to the trails (LOD area) would be long term, minor, and adverse since these areas contain naturally functioning soils that could support the growth of the San Francisco lessingia. Impacts would occur as a result of disturbance by dogs through trampling or dog waste; nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would affect only a portion of the entire site; however, the Presidio Recovery Unit for this species includes most of the trails in the area around Baker Beach and Bluffs to Golden Gate Bridge, including part of the Coastal Trail (USFWS 2003), where on-leash dog walking would be allowed under alternative D. Physically restraining dogs on leash would protect San Francisco lessingia and potential habitat, but the Presidio Recovery Unit for the species is located in and adjacent to areas where on-leash dog walking would be allowed; dogs could affect the population of San Francisco lessingia in north Baker Beach through trampling or dog waste; areas designated for further study and potential recovery of the San Francisco lessingia could also be affected by dogs. Therefore, assuming compliance, alternative D would result in overall negligible to long-term minor adverse impacts on the San Francisco lessingia because suitable habitat could occasionally be degraded by dogs at this site but effects would be localized in a relatively small area.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on the San Francisco lessingia.

Cumulative Impacts. The negligible to long-term minor adverse impacts on the San Francisco lessingia from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative D were considered together

with the effects of the projects mentioned above in alternative B. The beneficial effects from the habitat restoration projects and protected recovery areas would not be expected to reduce the adverse impacts on the San Francisco lessingia from alternative D. Cumulatively, alternative D would have negligible to long-term minor adverse impacts on the San Francisco lessingia because the core San Francisco lessingia population exists in the Lobos Creek Valley restoration site (near Baker Beach and Bluffs to Golden Gate Bridge).

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION TABLE

San Francisco Lessingia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect San Francisco lessingia and potential habitat, but recovery and enhancement sites for the species are located in and adjacent to areas where on-leash dog walking would be allowed; dogs could affect the San Francisco lessingia through trampling or dog waste	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the northern portion of the beach and on all trails in the vicinity of Baker Beach except the Batteries to Bluffs Trail and the Battery Crosby Trail, where dog walking would not be allowed. A VSCA would be established on the southern portion of the beach, immediately north of Lobos Creek and extending to the north end of the north parking lot. The beach VSCA would not be located in suitable habitat for the San Francisco lessingia. In general, impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails; the beach is not suitable habitat for the San Francisco lessingia. Impacts on the San Francisco lessingia adjacent to the trails (LOD area) would be long term, minor, and adverse since these areas contain naturally functioning soils that could support the growth of the San Francisco lessingia. Impacts would occur as a result of disturbance by dogs through trampling or dog waste; nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would affect only a portion of the entire site; however, the Presidio Recovery Unit for this species includes most of the trails in the area around Baker Beach and Bluffs to Golden Gate Bridge, including part of the Coastal Trail and the Dune Trail (USFWS 2003), where on-leash dog walking would be allowed for alternative E. Physically restraining dogs on leash would protect San Francisco lessingia and potential habitat, but the Presidio Recovery Unit for the species is located in and adjacent to areas where on-leash dog walking would be allowed; dogs could affect the San Francisco lessingia through trampling or dog waste; areas designated for further study and potential recovery of the San Francisco lessingia could also be affected by dogs. Therefore, assuming compliance, alternative E would result in overall negligible to long-term minor adverse impacts on the San Francisco lessingia because suitable habitat could occasionally be degraded by dogs at this site but effects would be localized in a relatively small area.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may have up to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Baker

Beach. Impacts on the San Francisco lessingia from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on the San Francisco lessingia.

Cumulative Impacts. The negligible to long-term minor adverse impacts on the San Francisco lessingia from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative E were considered together with the effects of the projects mentioned above under alternative B. The beneficial effects from the habitat restoration projects and protected recovery areas would not be expected to reduce the adverse impacts on the San Francisco lessingia from alternative E. Cumulatively, alternative E would have negligible to long-term minor adverse impacts on the San Francisco lessingia because the core San Francisco lessingia population exists in the Lobos Creek Valley restoration site (near Baker Beach and Bluffs to Golden Gate Bridge).

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION TABLE

San Francisco Lessingia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect San Francisco lessingia and potential habitat, but recovery and enhancement sites for the species are located in and adjacent to areas where on-leash dog walking would be allowed; dogs could affect the San Francisco lessingia through trampling or dog waste	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the section of Baker Beach north of Baker Beach Access Trail #2 and on the beach access trails leading to that section of beach, as well as on the Coastal Trail. No dog walking would be allowed on the section of beach south of the north parking lot (approximately half of the beach), on the trails leading to the southern section of beach, or on the Dune (sand ladder), Batteries to Bluffs, and Battery Crosby trails. In general, impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails; the beach is not suitable habitat for the San Francisco lessingia. Impacts on the San Francisco lessingia adjacent to the trails (LOD area) would be long term, minor, and adverse since these areas contain naturally functioning soils that could support the growth of the San Francisco lessingia. Impacts would occur as a result of disturbance by dogs through trampling or dog waste; nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would affect only a portion of the entire site; however, the Presidio recovery unit for this species includes most of the trails in the area around Baker Beach, including part of the Coastal Trail (USFWS 2003), where on-leash dog walking would be allowed under the preferred alternative. Physically restraining dogs on leash would protect San Francisco lessingia and potential habitat, but the Presidio recovery unit for the species is located in and adjacent to areas where on-leash dog walking would be allowed; dogs could affect the San Francisco lessingia through trampling or dog waste; and areas designated for further study and potential recovery of the San Francisco lessingia could also be affected by dogs. The recovery strategy for San Francisco lessingia is

based on not only protecting and expanding the existing populations but also the "active reintroduction and expansion of San Francisco lessingia in unoccupied, restored or enhanced habitat within its historic range" (USFWS 2003, 51).

Therefore, assuming compliance, the preferred alternative would result in overall negligible to long-term minor adverse impacts on the San Francisco lessingia because suitable habitat could occasionally be degraded by dogs at this site, but these impacts would be localized in a relatively small area.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs with a limit of six dogs on leash. At Baker Beach, walking four to six dogs with an NPS-issued permit would be limited to the north parking lot, Baker Beach Access Trail #2, and the beach north of the trail. Permits may further restrict use by time and area. Permits would be allowed at Baker Beach. Impacts on the San Francisco lessingia from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on the San Francisco lessingia.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Francisco lessingia at or in the vicinity of this site.

Primary among the past actions that have influenced listed plant species at GGNRA such as San Francisco lessingia are urban development and loss of habitat continuity, the establishment and overall dominance by non-native plant species, and land management practices including placement of roads and trails for park users. In particular, urban development and landscaping have reduced the available habitat for these species, with the gradual creation of islands of intact vegetation surrounded by infrastructure and associated non-native species. Populations of rare plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival.

Current transportation, trail, and development planning efforts in GGNRA and beyond NPS-managed boundaries would have direct short-term effects on special-status plant species in the disturbance area, and long-term direct and indirect effects on vegetation as a whole through potential creation of habitat (through ground-disturbing activities) for non-native plant species encroachment and establishment. However, ongoing efforts to identify mitigation for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would reduce the potential for these types of impacts. Since special-status plants are mapped and monitored on a regular basis and are considered during site design and avoided wherever possible, these impacts would be minor to negligible. Other ongoing programs, including non-native plant removal projects in the park, the site management plan for Milagra Ridge, habitat restoration programs, volunteer opportunities sponsored by the park, and maintenance operations all have the potential to affect listed plant species at GGNRA. The Wildland/Urban Interface Initiative projects on private lands and lands managed by other agencies adjacent to GGNRA-managed lands, the GGNRA *Fire Management Plan* (NPS 2005b), and the vegetation management plan for the Presidio would beneficially affect the park's vegetation and associated listed plant species, including the San Francisco lessingia. Additionally, park stewardship

programs, which include native plant habitat restoration projects that occur throughout the park, will provide beneficial effects to the San Francisco lessingia.

The San Francisco lessingia currently exists in only a few locations in San Francisco and Daly City, California, as two separate genotypes. Habitat loss, changes in ecological processes due to human development, and encroachment by invasive species are the primary reasons that the species is listed. There is a small population in north Baker Beach. However, the core San Francisco lessingia population exists in the Lobos Creek Valley restoration site (near Baker Beach and Bluffs to Golden Gate Bridge), where the population was between 154,065 and 231,097 individuals in 2008 (NPS 2008i). Through future restoration projects, and if the recovery areas for the species at Baker Beach and Bluffs to Golden Gate Bridge are adequately protected in the future, a beneficial effect on the San Francisco lessingia would occur. In addition, under the PTMP for the Presidio, habitat for rare and unique plant and wildlife species will be protected and enhanced (Presidio Trust 2002, 4), which would have a long-term beneficial impact to the San Francisco lessingia.

The negligible to long-term minor adverse impacts on the San Francisco lessingia from dogs at Baker Beach and Bluffs to Golden Gate Bridge under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the habitat restoration projects and protected recovery areas would not be expected to reduce the adverse impacts on the San Francisco lessingia from the preferred alternative. Cumulatively, the preferred alternative would have negligible to long-term minor adverse impacts on the San Francisco lessingia because the core San Francisco lessingia population exists in the Lobos Creek Valley restoration site (near Baker Beach and Bluffs to Golden Gate Bridge).

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE F CONCLUSION TABLE

San Francisco Lessingia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect San Francisco lessingia and potential habitat, but recovery and enhancement sites for the species are located in and adjacent to areas where on-leash dog walking would be allowed; dogs could affect the San Francisco lessingia through trampling or dog waste	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts

Fort Funston

Alternative A: No Action. Under current conditions, dogs are allowed under voice control throughout Fort Funston, with the exception of three closures to all visitors as well as dogs: the 12-acre fenced Habitat Protection Area closure in upper Fort Funston, the voluntary seasonal advisory for bank swallow protection (April 1 – August 15) on a section of beach extending 50 feet from the base of the coastal bluff below the bank swallow habitat areas, and the north end of the Sunset Trail, due to erosion. Although appropriate dune scrub habitat for the San Francisco lessingia occurs at Fort Funston, the plant does not currently occur there. Due to the historic presence of the San Francisco lessingia at Fort Funston, specific locations within this site have been designated as San Francisco lessingia recovery and enhancement sites by USFWS (USFWS 2003, 128, 141). The recovery strategy for San Francisco lessingia is based on not only protecting and expanding the existing populations but also the “active reintroduction and expansion

of San Francisco lessingia in unoccupied, restored or enhanced habitat within its historic range" (USFWS 2003, 51). This site supports habitat for the San Francisco lessingia, but currently, San Francisco lessingia introduction is precluded by the inability to protect reintroductions of this species from unrestricted dog use. Habitat that would support the San Francisco lessingia is adjacent to the bank swallow habitat; fencing along the Sunset Trail reduces access to the dune habitat that would support San Francisco lessingia, as well as the bluff top above the bank swallow habitat. A portion of the northern end of the Sunset Trail in the site is also closed due to increasing erosion. The trails traverse coastal dune habitat that could support the San Francisco lessingia at this site. Current heavy use by recreationists affects the coastal bluff top and dune areas, and dogs and their owners/walkers have created a myriad of social trails in the coastal dunes north of the parking lots. NPS has implemented dune restoration in the northern section of this site and has enclosed the areas with fencing, but dogs have accessed these restoration areas because the fencing has deteriorated or been buried by sand movement, as observed by park staff. A total of 172 dog-related incidents were recorded from 2008 through 2011 with an additional 157 violations between 2012 and 2016 (tables 26a and 26b).

As previously stated, vegetation can be affected by trampling indirectly through the consolidation of the soil and directly through treading upon the plant itself (Bates 1935, 476). "High foot traffic (both people and dogs) resulting from an off-leash area would result in trampling and disturbance of vegetation" (Andrusiak 2003, 5). It has been suggested that heavy off-leash dog use increases deterioration of native dune communities (Shulzitski and Russell 2004, 5). Sensitive environments can be subject to physical disturbance by dogs (through digging or bed-making) and could damage vegetation and soils (Sime 1999, 8.9). Additionally, it has been demonstrated that dog waste can affect sensitive soil and plant communities (USFWS 1998a, I-12). Therefore, dogs could affect suitable coastal dune habitat for the San Francisco lessingia and could affect the plant directly through trampling, digging, or dog waste. Under alternative A, dogs would continue to access the coastal dune habitat at Fort Funston, where trails traverse habitat that could support this species at the site; dogs could also access restoration areas, despite the fencing in place. Additionally, the unrestricted dog use at the site would preclude the reintroduction of this species by NPS. Therefore, alternative A would result in continued long-term moderate adverse impacts on the San Francisco lessingia at Fort Funston.

No permit system exists for commercial dog walking under alternative A. However, commercial dog walking regularly occurs at Fort Funston. Commercial dog walking would continue to contribute to the long-term moderate adverse impacts on the San Francisco lessingia.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Francisco lessingia at or in the vicinity of this site.

Primary among the past actions that have influenced listed plant species at GGNRA such as San Francisco lessingia are urban development and loss of habitat continuity, the establishment and overall dominance by non-native plant and tree species, and land management practices including placement of roads and trails for park users. In particular, urban development and landscaping have reduced the available habitat for these species, with the gradual creation of islands of intact vegetation surrounded by infrastructure and associated non-native species. Populations of rare plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival.

Current transportation, trail, and development planning efforts in GGNRA and beyond NPS-managed boundaries would have direct short-term effects on special-status plant species in the disturbance area and long-term direct and indirect effects on vegetation as a whole through potential creation of habitat

(through ground-disturbing activities) for non-native plant species encroachment and establishment. However, ongoing efforts to identify mitigation for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would reduce the potential for these types of impacts. Since special-status plants are mapped and monitored on a regular basis and are considered during site design and avoided wherever possible, these impacts would be minor to negligible. The vegetation management plan for the Presidio would beneficially affect vegetation and associated listed plant species, including the San Francisco lessingia. Additionally, GGNRA park stewardship programs, which include native plant habitat restoration projects, occur throughout the park. Both the vegetation management plan and the park stewardship programs are led by NPS natural resources staff and will provide beneficial effects to the San Francisco lessingia.

The San Francisco lessingia currently exists in only a few locations in San Francisco and Daly City, California, as two separate genotypes. Habitat loss, changes in ecological processes due to human development, and encroachment by invasive species are the primary reasons that the species is listed. However, the core San Francisco lessingia population exists in the Lobos Creek valley restoration site (near Baker Beach and Bluffs to Golden Gate Bridge), where the population was between 154,065 and 231,097 individuals in 2008 (NPS 2008i). Through future restoration projects, and if the recovery areas for the species at Baker Beach are adequately protected in the future, a beneficial effect on the San Francisco lessingia would occur. However, the greatest benefit to this species would occur if the Daly City genotype is reintroduced at Fort Funston, because the NPS would be implementing actions that have been identified in the recovery plan that can help in the recovery of this species.

The GGNRA interim compendium amendment would require commercial dog walkers to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. As stated, commercial dog walking at Fort Funston occurs regularly. Therefore, the interim compendium amendment could have a beneficial effect on San Francisco lessingia and sensitive dune habitat by limiting the number of dogs commercial dog walkers could have at the site at one time. The permitting program could reduce the impacts from trampling, digging, and nutrient addition from dog waste; the permitting could also reduce direct physical harm to plants.

The long-term moderate adverse impacts on the San Francisco lessingia from dogs at Fort Funston under alternative A were considered together with the effects of the projects mentioned above. There would be a combination of adverse and beneficial effects on the San Francisco lessingia from actions in and around Fort Funston; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the long-term moderate adverse impacts under alternative A would result in long-term moderate adverse cumulative impacts.

FORT FUNSTON ALTERNATIVE A CONCLUSION TABLE

San Francisco Lessingia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Dogs access coastal dune habitat and trails traverse habitat that could support this species at the site; dogs access restoration areas, despite fencing in place; species could be affected by trampling, digging, or dog waste; introduction of the species at the site would be precluded by the inability to protect reintroduced populations from unrestricted dog use	N/A	Long-term moderate adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed on the beach and trails that are not closed to dogs. Since the distribution of the draft plan/SEIS, the Battery Davis Trail has been closed to visitors by the NPS due to safety concerns from coastal erosion. Closed areas include the 12-acre habitat protection area that restricts both visitors and dogs for the habitat protection, the beach area below the northern bluffs that has a seasonal advisory (April 1 – August 15) for the protection of the bank swallow colony, and a section of trail at the north end of the site closed due to erosion. Dog walking under voice control would no longer be allowed under this alternative. In general, impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails; the beach is not suitable habitat for the San Francisco lessingia. Impacts on the San Francisco lessingia adjacent to the trails (LOD area) would be long term, minor, and adverse since these areas contain naturally functioning soils that could support the growth of the San Francisco lessingia. Impacts would occur as a result of disturbance by dogs through trampling or dog waste; nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area.

The long-term minor adverse impacts on the San Francisco lessingia along the trails would occur in a relatively small area when compared to the site as a whole. Therefore, assuming compliance, alternative B would result in overall negligible impacts on the San Francisco lessingia at Fort Funston. Although coastal dune habitat for this species exists at Fort Funston, there is no current documentation of the existing presence of this species. Physically restraining dogs on leash would protect the potential San Francisco lessingia habitat and may allow the NPS to reintroduce the Daly City genotype of the species at Fort Funston. It is possible that in the future the San Francisco lessingia population in GGNRA would have increased reproductive success and the ability to increase in size, but it is unknown at the time whether this alternative would result in measurable or perceptible changes in the San Francisco lessingia or its habitat and thus a negligible impact is appropriate.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Fort Funston, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on the San Francisco lessingia from dogs at the site. Overall impacts on the San Francisco lessingia from dogs walked by both commercial and private individuals are summarized above.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Francisco lessingia at or in the vicinity of this site.

Primary among the past actions that have influenced listed plant species at GGNRA such as San Francisco lessingia are urban development and loss of habitat continuity, the establishment and overall dominance by non-native plant and tree species, and land management practices including placement of roads and trails for park users. In particular, urban development and landscaping have reduced the available habitat for these species, with the gradual creation of islands of intact vegetation surrounded by infrastructure and associated non-native species. Populations of rare plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival.

Current transportation, trail, and development planning efforts in GGNRA and beyond NPS-managed boundaries would have direct short-term effects on special-status plant species in the disturbance area and long-term direct and indirect effects on vegetation as a whole through potential creation of habitat (through ground-disturbing activities) for non-native plant species encroachment and establishment. However, ongoing efforts to identify mitigation for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would reduce the potential for these types of impacts. Since special-status plants are mapped and monitored on a regular basis and are considered during site design and avoided wherever possible, these impacts would be minor to negligible. The vegetation management plan for the Presidio would beneficially affect vegetation and associated listed plant species, including the San Francisco lessingia. Additionally, GGNRA park stewardship programs, which include native plant habitat restoration projects, occur throughout the park. Both the vegetation management plan and the park stewardship programs are led by NPS natural resources staff and will provide beneficial effects to the San Francisco lessingia.

The San Francisco lessingia currently exists in only a few locations in San Francisco and Daly City, California, as two separate genotypes. Habitat loss, changes in ecological processes due to human development, and encroachment by invasive species are the primary reasons that the species is listed. However, the core San Francisco lessingia population exists in the Lobos Creek valley restoration site (near Baker Beach and Bluffs to Golden Gate Bridge), where the population was between 154,065 and 231,097 individuals in 2008 (NPS 2008i). Through future restoration projects, and if the recovery areas for the species at Baker Beach are adequately protected in the future, a beneficial effect on the San Francisco lessingia would occur. However, the greatest benefit to this species would occur if the Daly City genotype is reintroduced at Fort Funston, because the NPS would be implementing actions that have been identified in the recovery plan that can help in the recovery of this species.

The negligible impacts on the San Francisco lessingia at Fort Funston under alternative B were considered together with the effects of the projects mentioned above. The greatest benefit to this species would occur if the Daly City genotype is reintroduced at Fort Funston, because the NPS would be implementing actions that have been identified in the recovery plan that can help in the recovery of this species. Cumulatively, this alternative would have negligible impacts on the San Francisco lessingia when added to the other past, present, or foreseeable future actions at and around this park site as part of alternative B.

FORT FUNSTON ALTERNATIVE B CONCLUSION TABLE

San Francisco Lessingia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect San Francisco lessingia and potential habitat and may allow the NPS to reintroduce the genotype at Fort Funston	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking on all trails north of the parking lot (except the Sunset Trail from the parking lot to the junction with the Chip Trail and the Funston Horse Trail, which would be closed to dogs, and the Battery Davis Trail, which is closed to all visitors due to erosion), and on the Funston Beach Trail South (sand ladder) and Sunset Trail south of the main parking lot. Dog walking under voice and sight control would be allowed in two VSCAs (both outside San Francisco lessingia habitat areas): one on the beach south of the Funston Beach Trail North and one north of the main parking lot between the Chip Trail, the Sunset Trail and the parking lot. In general, impacts would be limited to the trails and the 6-foot corridors immediately adjacent to the trails; the one VSCA would be located on a beach where no suitable San Francisco lessingia habitat exists and the other VSCA would be located in an upland area that could potentially support the San Francisco lessingia. The impacts on the San Francisco lessingia adjacent to the trails (LOD area) and within the VSCAs would be long term, minor to moderate, and adverse since these areas contain naturally functioning soils that could support the growth of the San Francisco lessingia. Impacts would occur as a result of disturbance by dogs through trampling or dog waste, and nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area. Additionally, restoration potential at this site would be limited due to the upland VSCA.

The long-term minor to moderate adverse impacts on the San Francisco lessingia along the trails would occur in a portion of the site at Fort Funston. The upland VSCA would be in coastal dune vegetation that could support San Francisco lessingia, but in other areas, physically restraining dogs on leash would protect San Francisco lessingia and potential habitat. Therefore, assuming compliance, alternative C would result in overall long-term, minor, adverse impacts on the San Francisco lessingia at Fort Funston. The restoration potential would be limited for the NPS to reintroduce the Daly City genotype of the species at Fort Funston.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may have up to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Fort Funston. Impacts on the San Francisco lessingia from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would long-term, minor, and adverse.

Cumulative Impacts. The long-term, minor, adverse impacts on the San Francisco lessingia under alternative C were considered together with the effects of the projects mentioned above under alternative B "Cumulative Impacts." As stated above for alternative B, the greatest benefit to this species would occur if the Daly City genotype is reintroduced at Fort Funston, because the NPS would be implementing actions that have been identified in the recovery plan that can help in the recovery of this species. Cumulatively, this alternative would have negligible impacts on the San Francisco lessingia when added to these other past, present, or foreseeable future actions at and around this park site as part of alternative C.

FORT FUNSTON ALTERNATIVE C CONCLUSION TABLE

San Francisco Lessingia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	The upland VSCA is within coastal dune vegetation that could support San Francisco lessingia; in other areas physical restraint of dogs would protect San Francisco lessingia and potential habitat; restoration potential is limited in upland VSCA	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would allow on-leash dog walking on most trails in the upper Fort Funston area and on the beach south of the Funston Beach Trail North. The northern end of the Sunset Trail would be closed to all visitors due to erosion, and the Funston Horse Trail would be closed to dogs. Dog walking under voice and sight control would be allowed in a fenced VSCA north of the water fountain between the Sunset Trail and the Funston Horse Trail, where no San Francisco lessingia habitat exists. No dogs would be allowed on the beach north of the Funston Beach Trail North, where the bank swallows nest in the coastal bluffs. In general, impacts would be limited to the trails and the 6-foot corridors immediately adjacent to the trails; the one VSCA would be located on a beach where no suitable San Francisco lessingia habitat exists and the other VSCA would be located in an upland area that could potentially support the San Francisco lessingia. The impacts on the San Francisco lessingia adjacent to the trails (LOD area) and within the VSCAs would be long term, minor to moderate, and adverse since these areas contain naturally functioning soils that could support the growth of the San Francisco lessingia. Impacts would occur as a result of disturbance by dogs through trampling or dog waste, and nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area. Additionally, restoration potential at this site would be limited due to the upland VSCA in coastal dune habitat.

The long-term minor to moderate adverse impacts on the San Francisco lessingia along the trails would occur in a portion of the site at Fort Funston. The upland VSCA would be in coastal dune vegetation that could support San Francisco lessingia, but in other areas, physically restraining dogs on leash would protect San Francisco lessingia and potential habitat. Therefore, assuming compliance, alternative D would result in overall long-term, minor, adverse impacts on the San Francisco lessingia at Fort Funston. The restoration potential would be limited for the NPS to reintroduce the Daly City genotype of the species at Fort Funston.

No commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D; therefore, commercial and permitted dog walking would have no impact on the San Francisco lessingia.

Cumulative Impacts. The long-term, minor, adverse impacts on the San Francisco lessingia at Fort Funston under alternative D were considered together with the effects of the projects mentioned above under alternative B "Cumulative Impacts." As stated above for alternative B, the greatest benefit to this species would occur if the Daly City genotype is reintroduced at Fort Funston, because the NPS would be implementing actions that have been identified in the recovery plan that can help in the recovery of this species. Cumulatively, this alternative would have negligible impacts on the San Francisco lessingia when added to the other past, present, or foreseeable future actions at and around this park site at Fort Funston under alternative D.

FORT FUNSTON ALTERNATIVE D CONCLUSION TABLE

San Francisco Lessingia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	The upland VSCA is within coastal dune vegetation that could support San Francisco lessingia; in other areas physical restraint of dogs would protect San Francisco lessingia and potential habitat; restoration potential is limited in upland VSCA	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on all trails outside of the upland VSCA except the north end of the Sunset Trail and the Battery Davis Trail, which are closed to all visitors due to erosion, and Funston Horse Trail, which would be closed to dogs. On-leash dog walking would also be allowed on the beach north of the Funston Beach Trail North. Dog walking under voice and sight control would be allowed in two VSCAs. One VSCA would be on the beach south of Funston Beach Trail North to the Fort Funston southern boundary. The second ("upland") VSCA would extend north from the main parking lot. This VSCA corridor would extend from just north of the new trail to be built along the northern edge of the parking lot and would extend to, and include the Funston Beach Trail North. The VSCA corridor would include the Chip Trail and sections of the Sunset Trail, Funston Road, and Battery Davis Trail, all north of the parking lot. The VSCA would extend into the disturbed area across from the Funston Beach Trail North. A seasonal advisory to all visitors would remain in place that extends 50 feet from the foot of the northernmost bluffs for protection of the bank swallow during nesting season (April 1 – August 15) (NPS 2009e, 19). Impacts would be limited to the trails and the 6-foot corridor immediately adjacent to the trails and in the habitat corridor VSCA; the beach VSCA would be located where no suitable San Francisco lessingia habitat exists. Impacts on the San Francisco lessingia adjacent to the trails (LOD area) and in the large habitat corridor VSCA would be long term, moderate, and adverse since the LOD areas contain naturally functioning soils that could support the growth of the San Francisco lessingia. Concentrated use in the VSCA corridor and in the LOD area, both of which support coastal dune vegetation and could support the San Francisco lessingia, would result in frequent effects from dogs through trampling or dog waste; nutrient addition would also occur. The large habitat corridor VSCA would preclude using the area for reintroducing the San Francisco lessingia at this location.

The long-term moderate adverse impacts on the San Francisco lessingia along the trails and in the habitat corridor VSCA would occur in a relatively large area when compared to the site as a whole. The large upland VSCA corridor would be in coastal dune vegetation that could support San Francisco lessingia, but in other areas, physically restraining dogs on leash would protect San Francisco lessingia and potential habitat. Therefore, assuming compliance, alternative E would result in overall long-term, minor, adverse impacts on the San Francisco lessingia at Fort Funston. The restoration potential would be limited for the NPS to reintroduce the Daly City genotype of the species at Fort Funston.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a VSCA, permit holders may have up to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Fort Funston. Impacts on the San Francisco lessingia from permit holders with four to six dogs off leash may increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Impacts on the San Francisco lessingia from commercial dog walkers would

be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The long-term, minor impacts on the San Francisco lessingia at Fort Funston under alternative E were considered together with the effects of the projects mentioned above under alternative B "Cumulative Impacts." As stated above for alternative B, the greatest benefit to this species would occur if the Daly City genotype is reintroduced at Fort Funston, because the NPS would be implementing actions that have been identified in the recovery plan that can help in the recovery of this species. Cumulatively, this alternative would have negligible impacts on the San Francisco lessingia when added to the other past, present, or foreseeable future actions at and around this park site at Fort Funston as part of alternative E.

FORT FUNSTON ALTERNATIVE E CONCLUSION TABLE

San Francisco Lessingia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	The large upland VSCA corridor would be in coastal dune vegetation that could support San Francisco lessingia; in other areas, physically restraining dogs on leash would protect San Francisco lessingia and potential habitat; trails and the LOD area are a small portion of the site but the VSCA corridor would be large; restoration potential would be limited in this area	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. On-leash dog walking would be allowed on all trails north of the parking lot (except the Funston Horse Trail, which would be closed to dogs, and the north end of the Sunset Trail and the Battery Davis Trail, which are closed to all visitors due to erosion) including a future planned trail adjacent to Great Highway in the northern portion of the site, and on the Funston Beach Trail South (sand ladder) and Sunset Trail south of the main parking lot. Dog walking under voice and sight control would be allowed in two designated VSCAs, one on the beach south of the Funston Beach Trail North and a second ("upland" VSCA) north from the main parking lot, the same as alternative E. The "upland" VSCA would include the following areas: the Funston Trail, the disturbed area northeast of the Funston Trail, the Funston Beach Trail (North), the area east of (but not including) the Sunset Trail and north of the main parking lot, encompassing the Chip Trail and its eastern embankment, and the Battery Davis Trail (West). No impacts on the San Francisco lessingia within the VSCAs would occur under the preferred alternative because the plant does not exist in these areas. In general, impacts would be limited to the trails and the 6-foot corridors immediately adjacent to the trails; the one VSCA would be located on a beach where no suitable San Francisco lessingia habitat exists and the other VSCA would be located in an upland area that could potentially support the San Francisco lessingia. The impacts on the San Francisco lessingia adjacent to the trails (LOD area) and within the VSCAs would be long term, minor to moderate, and adverse since these areas contain naturally functioning soils that could support the growth of the San Francisco lessingia. Impacts would occur as a result of disturbance by dogs through trampling or dog waste, and nutrient addition could also occur from outside the LOD area, but these impacts would be localized in a relatively small area. Additionally, restoration potential at this site would be limited due to the upland VSCA.

The long-term minor to moderate adverse impacts on the San Francisco lessingia along the trails would occur in a portion of the site at Fort Funston. The upland VSCA would be in coastal dune vegetation that

could support San Francisco lessingia, but in other areas, physically restraining dogs on leash would protect San Francisco lessingia and potential habitat. Therefore, assuming compliance, the preferred alternative would result in overall long-term, minor, adverse impacts on the San Francisco lessingia at Fort Funston. The restoration potential would be limited for the NPS to reintroduce the Daly City genotype of the species at Fort Funston.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. The permits may restrict use by time and area. Permits would be allowed at Fort Funston but would be limited to the trails and VSCA areas south of the Fort Funston Trail (North). Impacts on the San Francisco lessingia from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would long-term, minor, and adverse.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the San Francisco lessingia at or in the vicinity of this site.

Primary among the past actions that have influenced listed plant species at GGNRA such as San Francisco lessingia are urban development and loss of habitat continuity, the establishment and overall dominance by non-native plant and tree species, and land management practices including placement of roads and trails for park users. In particular, urban development and landscaping have reduced the available habitat for these species, with the gradual creation of islands of intact vegetation surrounded by infrastructure and associated non-native species. Populations of rare plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival.

Current transportation, trail, and development planning efforts in GGNRA and beyond NPS-managed boundaries would have direct short-term effects on special-status plant species in the disturbance area and long-term direct and indirect effects on vegetation as a whole through potential creation of habitat (through ground disturbing activities) for non-native plant species encroachment and establishment. However, ongoing efforts to identify mitigation for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would reduce the potential for these types of impacts. Since special-status plants are mapped and monitored on a regular basis and are considered during site design and avoided wherever possible, these impacts would be minor to negligible. The vegetation management plan for the Presidio would beneficially affect vegetation and associated listed plant species, including the San Francisco lessingia. Additionally, GGNRA park stewardship programs, which include native plant habitat restoration projects, occur throughout the park. Both the vegetation management plan and the park stewardship programs are led by NPS natural resources staff and will provide beneficial effects to the San Francisco lessingia.

The San Francisco lessingia currently exists in only a few locations in San Francisco and Daly City, California, as two separate genotypes. Habitat loss, changes in ecological processes due to human development, and encroachment by invasive species are the primary reasons that the species is listed. However, the core San Francisco lessingia population exists in the Lobos Creek Valley restoration site (near Baker Beach and Bluffs to Golden Gate Bridge), where the population was between 154,065 and 231,097 individuals in 2008 (NPS 2008i). Through future restoration projects, and if the recovery areas for the species at Baker Beach are adequately protected in the future, a beneficial effect on the San Francisco lessingia would occur. However, the greatest benefit to this species would occur if the Daly

City genotype is reintroduced at Fort Funston, because the NPS would be implementing actions that have been identified in the recovery plan that can help in the recovery of this species.

The long-term, minor, adverse impacts on the San Francisco lessingia under the preferred alternative were considered together with the effects of the projects mentioned above. As stated above, the greatest benefit to this species would occur if the Daly City genotype is reintroduced at Fort Funston. Cumulatively, this alternative would have negligible impacts on the San Francisco lessingia when added to the other past, present, or foreseeable future actions at and around this park site at Fort Funston as part of the preferred alternative.

FORT FUNSTON PREFERRED ALTERNATIVE F CONCLUSION TABLE

San Francisco Lessingia Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	The upland VSCA is within coastal dune vegetation that could support San Francisco lessingia; in other areas physical restraint of dogs would protect San Francisco lessingia and potential habitat; restoration potential is limited in upland VSCA	Beneficial, assuming compliance	Negligible cumulative impacts

IMPACTS TO HICKMAN'S POTENTILLA (FEDERALLY ENDANGERED AND STATE ENDANGERED) BY SITE AND ALTERNATIVE

This plant species inhabits vernally moist areas in serpentine grasslands, coastal scrub, and/or chaparral. There are several known occurrences of Hickman's potentilla at Rancho Corral de Tierra in the Montara Area (URS Corporation 2010, Figure 19). Suitable habitat to support Hickman's potentilla occurs at Mori Point (URS Corporation 2010, Figure 19), but there are no mapped occurrences of this plant presently.

Mori Point

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed on all trails and the portion of the beach owned by the NPS. This site has documented moderate to high visitor use (table 10). Both the road (on one side) and the trails traverse coastal scrub habitat that could support Hickman's potentilla at this site.

Under alternative A, dogs could impact Hickman's potentilla through trampling, digging, or dog waste while traversing the site and accessing unfenced seasonally wet areas where suitable habitat occurs. Therefore, this alternative would result in long-term minor adverse impacts on suitable habitat for Hickman's potentilla at Mori Point. These impacts on suitable Hickman's potentilla habitat would be considered perceptible changes, but localized at the site and therefore minor.

No permit system exists for commercial dog walking under alternative A. At Mori Point, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on the suitable habitat for Hickman's potentilla.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the Hickman's potentilla at or in the vicinity of this site.

Park stewardship programs, which include native plant habitat restoration projects throughout the park, may provide beneficial effects to the species; maintenance operations also have the potential to affect Hickman's potentilla. Although it is unknown whether site-specific plans to reintroduce this species exist, the San Francisco Natural Areas Program, which protects remnant habitats and biological communities, may have a beneficial effect on Hickman's potentilla. The *Mori Point Restoration and Trail Plan* restored the ecological integrity of existing habitats and restored native plant communities at the Mori Point site and may benefit Hickman's potentilla (NPS 2010e, 1, GGNPC 2016, 1). Additionally, the Martini Creek watershed, located in San Mateo County, is dominated by coastal scrub habitat and is host to the only remaining viable population of Hickman's potentilla (CCC 2008, 17). The *Nonpoint Source Watershed Assessment for the James Fitzgerald Marine Reserve Critical Coastal Area*, including the Martini Creek watershed, could benefit Hickman's potentilla habitat through the development of an action plan to address potential and known nonpoint source pollution impacts and improve water quality conditions in and around the Fitzgerald Marine Reserve Critical Coastal Area (CCC 2008).

The long-term minor adverse impacts on suitable Hickman's potentilla habitat from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs, restoration projects, and the watershed plan should reduce some of the adverse impacts on the Hickman's potentilla habitat from alternative A. Therefore, the cumulative impacts on the Hickman's potentilla habitat under this alternative would be expected to be negligible.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Hickman's Potentilla Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Off-leash dogs could affect suitable habitat for Hickman's potentilla through digging, trampling, and dog waste	N/A	Negligible cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Mori Coastal Trail and the portion of beach owned by the NPS, but dogs would not be allowed on the Pollywog Trail, which is located adjacent to the ponds. On-leash dog walking would be based on an allowed 6-foot dog leash. The LOD area would include the Mori Coastal Trail and all areas adjacent to the trail up to 6 feet. Suitable Hickman's potentilla habitat is located away from the trail (beyond the 6-foot LOD corridor) in seasonally wet and moist areas; dogs on leash on the trails would not be in proximity to this habitat and thus would not likely impact Hickman's potentilla habitat in the LOD area, resulting in negligible impacts in the LOD area.

Dogs would be physically restrained on leash on all roads and trails at this site. As a result, this alternative would provide protection for suitable Hickman's potentilla habitat. Assuming compliance with regulations, alternative B would result in an overall negligible impact on Hickman's potentilla because no measurable or perceptible changes in suitable Hickman's potentilla habitat would be expected to occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on Hickman's potentilla habitat.

Cumulative Impacts. The negligible impacts on suitable Hickman's potentilla habitat from dogs at Mori Point under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the park stewardship programs, restoration projects, and the watershed plan combined with the negligible impacts on the Hickman's potentilla habitat from alternative B would result in negligible cumulative impacts.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Hickman's Potentilla Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Hickman's potentilla	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Alternative C would allow on-leash dog walking on the Mori Coastal Trail, the portion of beach owned by the NPS, and Old Mori Trail, but dogs would not be allowed on the Pollywog Trail, which is located adjacent to the ponds. The LOD area would include the Mori Coastal Trail and Old Mori Trail and all areas adjacent to the trails up to 6 feet. Suitable Hickman's potentilla habitat is located away from the trails (beyond the 6-foot LOD corridor) in seasonally wet and moist areas; dogs on leash on the trails would not be in proximity to this habitat and thus would not likely impact Hickman's potentilla in the LOD area, resulting in negligible impacts in the LOD area.

Dogs would be physically restrained on leash on all roads and trails at this site. As a result, this alternative would provide protection for suitable Hickman's potentilla habitat. Assuming compliance with regulations, alternative B would result in overall negligible impacts on Hickman's potentilla because no measurable or perceptible changes in Hickman's potentilla or suitable habitat would be expected to occur.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Mori Point is not one of the sites where permits would be issued to walk more than three dogs. Since commercial dog walking is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on Hickman's potentilla habitat.

Cumulative Impacts. The negligible impacts on suitable Hickman's potentilla habitat from dogs at Mori Point under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the park stewardship programs, restoration projects, and the watershed plan combined with the negligible impacts on the Hickman's potentilla habitat from alternative C would result in negligible cumulative impacts.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Hickman's Potentilla Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Hickman's potentilla	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Alternative D would prohibit dogs at the site. This alternative would be most protective of suitable Hickman's potentilla

habitat and would maintain the integrity of the entire Mori Point site. Assuming compliance, alternative D would result in no impact on Hickman's potentilla habitat.

Since dogs would not be allowed at Mori Point, there would be no impact from commercial dog walkers on Hickman's potentilla.

Cumulative Impacts. The lack of impacts on suitable Hickman's potentilla habitat from dogs at Mori Point under alternative D was considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the park stewardship programs, restoration projects, and the watershed plan combined with the lack of impacts on the Hickman's potentilla habitat from alternative D would result in beneficial cumulative impacts.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Hickman's Potentilla Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails as alternative C, with the addition of the Pollywog Trail. On-leash dog walking would be based on an allowed 6-foot dog leash. The LOD area would include the trails and all areas adjacent to the trails up to 6 feet. Suitable Hickman's potentilla habitat is located away from the trails (beyond the 6-foot LOD corridor) in seasonally wet and moist areas; dogs on leash on the trails would not be in proximity to this habitat and thus would not likely impact Hickman's potentilla in the LOD area, resulting in negligible impacts in the LOD area.

Dogs would be physically restrained on leash on all roads and trails at this site. As a result, this alternative would provide protection for suitable habitat for Hickman's potentilla. Assuming compliance with regulations, alternative E would result in overall negligible impacts on Hickman's potentilla because no measurable or perceptible changes in the potentilla or suitable habitat would be expected to occur.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Mori Point is not one of the sites where permits would be issued to walk more than three dogs. Since commercial dog walking activity is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on Hickman's potentilla.

Cumulative Impacts. The negligible impacts on suitable Hickman's potentilla habitat from dogs at Mori Point under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the park stewardship programs, restoration projects, and the watershed plan combined with the negligible impacts on the Hickman's potentilla habitat from alternative E would result in negligible cumulative impacts.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Hickman's Potentilla Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Hickman's potentilla	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on the Mori Coastal Trail, the portion of beach owned by NPS, the Pollywog Trail, and Old Mori Trail, and the Mori Headlands Trail. The LOD area would include the Mori Coastal Trail, Old Mori Trail, and all areas adjacent to the trails up to 6 feet. Suitable Hickman's potentilla habitat is located away from the trails (beyond the 6-foot LOD corridor) in seasonally wet and moist areas; dogs on leash on the trails would not be in proximity to this habitat and thus would not likely impact Hickman's potentilla in the LOD area, resulting in negligible impacts in the LOD area.

Dogs would be physically restrained on leash on all roads and trails at this site. As a result, this alternative would provide protection for suitable Hickman's potentilla habitat. Assuming compliance with regulations, the preferred alternative would result in overall negligible impacts on Hickman's potentilla because no measurable or perceptible changes in the potentilla or suitable habitat would be expected to occur.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Mori Point is not one of the sites where permits would be issued to walk more than three dogs. Since commercial dog walking is not common at Mori Point, it is likely that this alternative would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on Hickman's potentilla habitat.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on the Hickman's potentilla at or in the vicinity of this site.

Park stewardship programs, which include native plant habitat restoration projects throughout the park, may provide beneficial effects to the species; maintenance operations also have the potential to affect Hickman's potentilla. Although it is unknown whether site-specific plans to reintroduce this species exist, the San Francisco Natural Areas Program, which protects remnant habitats and biological communities, may have a beneficial effect on Hickman's potentilla. The *Mori Point Restoration and Trail Plan* restored the ecological integrity of existing habitats and restored native plant communities at the Mori Point site and may benefit Hickman's potentilla. Additionally, the Martini Creek watershed, located in San Mateo County, is dominated by coastal scrub habitat and is host to the only remaining viable population of Hickman's potentilla (CCC 2008, 17). The *Nonpoint Source Watershed Assessment for the James Fitzgerald Marine Reserve Critical Coastal Area*, including the Martini Creek watershed, could benefit Hickman's potentilla through the development of an action plan to address potential and known nonpoint source pollution impacts and improve water quality conditions in and around the Fitzgerald Marine Reserve Critical Coastal Area (CCC 2008).

The negligible impacts on suitable Hickman's potentilla habitat from dogs at Mori Point under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the park stewardship programs, restoration projects, and the watershed plan combined with the negligible impacts on the Hickman's potentilla habitat from the preferred alternative would result in negligible cumulative impacts.

MORI POINT PREFERRED ALTERNATIVE F CONCLUSION TABLE

Hickman's Potentilla Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Hickman's potentilla	Beneficial, assuming compliance	Negligible cumulative impacts

Rancho Corral de Tierra

Alternative A: No Action. Currently, on-leash dog walking is allowed at Rancho Corral de Tierra. Staff regularly working at Rancho characterize use by dog walkers as moderate overall with moderate to high use in the Montara area; compliance with the leash law is generally low. Because Rancho Corral de Tierra was transferred to the NPS in December 2011, law enforcement data and statistics are not yet available for this site. There are several known occurrences of Hickman's potentilla at Rancho Corral de Tierra in the Montara area, but most of the populations are located away from areas with heavy foot or vehicle traffic. However, there are two populations that are crossed by or adjacent to an existing trail that experiences visitor traffic in the Montara area (POST 2001, 28). There is also a known occurrence in the El Granada area of Rancho, but it is not located in proximity to trails at the site. In addition, potential habitat is located throughout the Rancho Corral de Tierra site (URS 2010, Figure 19). Rancho has low compliance with the leash law and NPS rangers have observed off-leash dogs running in areas with potentially sensitive habitat. NPS staff have observed dogs on top of Montara Mountain (in the El Granada area that supports suitable habitat for Hickman's potentilla). Under alternative A, dogs could impact the plant itself as well as suitable habitat for Hickman's potentilla through trampling, digging, or dog waste while traversing the site off leash. Therefore, this alternative would result in long-term moderate adverse impacts on Hickman's potentilla at Rancho Corral de Tierra since there are only nine populations of this plant at Rancho, two which are adjacent to popular trails at the site. Because few individuals of the species currently exist at the site, it is possible that impacts could affect the reproductive success of individuals of the species; therefore, impacts would be moderate.

Under alternative A, no permit system exists for commercial dog walking. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on Hickman's potentilla.

Cumulative Impacts. Projects and actions in and near Rancho Corral de Tierra were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on Hickman's potentilla at or in the vicinity of this site. Since the Rancho Corral de Tierra site has been transferred to the NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking.

Additional actions have had, are currently having, or have the potential to have adverse impacts on wildlife and wildlife habitat at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involved constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica and Montara (County of San Mateo 2016d, 1). The EIS for this project included minor alignment shifts of the project to circumvent a stand of Hickman's potentilla. As a result, there were no impacts to Hickman's potentilla in the final EIS because Hickman's potentilla was not found within the tunnel alternative corridor or immediate vicinity (FHA and CADOT 2002, 69). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

Since the Rancho Corral de Tierra site has been transferred to the NPS, general maintenance and protection of the site and associated natural resources have been occurring.

The long-term moderate adverse impacts on suitable Hickman's potentilla habitat from dogs at Rancho Corral de Tierra under alternative A were considered together with the effects of the projects mentioned above. The anticipated beneficial effects from the park stewardship programs should reduce some of the adverse impacts on Hickman's potentilla habitat from alternative A. Therefore, the cumulative impacts on Hickman's potentilla habitat under this alternative would be expected to be long-term, minor, and adverse.

RANCHO CORRAL DE TIERRA ALTERNATIVE A CONCLUSION TABLE

Hickman's Potentilla Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Off-leash dogs could affect Hickman's potentilla as well as suitable habitat through digging, trampling, and dog waste; known populations are in close proximity to trail	N/A	Long-term, minor, adverse cumulative impacts

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on some trails at Rancho Corral de Tierra in two areas open to dog walking near Montara and El Granada, which were identified by the local dog walking group as key areas for this use. There are currently no mapped occurrences of Hickman's potentilla near the trails at Rancho Corral de Tierra that would allow dog walking under alternative B, but potential habitat is located in the vicinity of dog walking trail areas (URS Corporation 2010, Figure 19). The LOD area would include the trails open to dog walking and the area adjacent to the trail up to 6 feet. Mapped occurrences of Hickman's potentilla habitat is located away from the trail (beyond the 6-foot LOD corridor); dogs on leash on the trail would not be in proximity to this habitat and thus would not likely impact Hickman's potentilla in the LOD area, resulting in negligible impacts in the LOD area.

Dogs would be physically restrained on leash on trails open to dog walking at this site. As a result, this alternative would provide protection for suitable Hickman's potentilla habitat. Overall, assuming compliance with regulations, alternative B would result in negligible impacts on Hickman's potentilla because no measurable or perceptible changes in the potentilla or suitable habitat would be expected to occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on Hickman's potentilla.

Cumulative Impacts. The negligible impacts on suitable Hickman's potentilla habitat from dogs at the Rancho Corral de Tierra under alternative B were considered together with the effects of the projects mentioned above under alternative A. The anticipated beneficial effects from park stewardship programs and the watershed plan combined with the negligible impacts on the Hickman's potentilla habitat from alternative B would result in negligible cumulative impacts.

RANCHO CORRAL DE TIERRA ALTERNATIVE B CONCLUSION TABLE

Hickman's Potentilla Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Hickman's potentilla	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative C: Emphasis on Multiple Use – Balanced by County. Under alternative C, on-leash dog walking would be allowed on the same trails as in alternative B in the Montara and El Granada areas. In addition, a VSCA is proposed in the Montara area between Le Conte Street and Tamarind Street, in a previously (partially) disturbed open area near the Farallone View School. The proposed VSCA would be located within an area where the Hickman's potentilla potentially occurs (URS Corporation 2010, 2-1).

In general, impacts would be limited to the trails and the 6-foot corridors immediately adjacent to the trails; the VSCA would be located in an area that could potentially support the Hickman's potentilla. The impacts on the Hickman's potentilla adjacent to the trails (LOD area) and within the VSCAs would be long term, minor to moderate, and adverse since these areas contain habitat and soils that could support the growth of the Hickman's potentilla. Impacts would occur as a result of disturbance by dogs through trampling or dog waste, and nutrient addition could occur from outside the LOD area, but these impacts would be localized in a relatively small area.

The long-term minor to moderate adverse impacts on the Hickman's potentilla along the trails would occur in a portion of the site at Rancho Corral de Tierra. The VSCA would be in an area that could but does not currently support Hickman's potentilla. In other areas, physically restraining dogs on leash would protect Hickman's potentilla and potential habitat. Therefore, assuming compliance, alternative C would result in overall long-term minor adverse impacts on the Hickman's potentilla at Rancho Corral de Tierra.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Rancho Corral de Tierra is not one of the sites where permits would be issued to walk more than three dogs. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on Hickman's potentilla.

Cumulative Impacts. The long-term minor adverse impacts on suitable Hickman's potentilla habitat from dogs at Rancho Corral de Tierra under alternative C were considered together with the effects of the projects mentioned above under alternative A. The anticipated beneficial effects from park stewardship programs should reduce some of the adverse impacts on Hickman's potentilla habitat from alternative C. Therefore, the cumulative impacts on Hickman's potentilla habitat under this alternative would be expected to be negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE C CONCLUSION TABLE

Hickman's Potentilla Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	The VSCA is within potential habitat that could support Hickman's potentilla; in other areas physical restraint of dogs would protect Hickman's potentilla and potential habitat	No change, assuming compliance	Negligible cumulative impacts

Alternative D: Most Protective of Resource Protection and Visitor Safety. Under alternative D, on-leash dog walking would be allowed in the Montara area on two trails: Old San Pedro Mountain Road and the Farallon Cutoff. Dogs would not be allowed in the El Granada area and would be physically restrained on leash at Montara on two trails open to dog walking. Mapped occurrences of Hickman's potentilla habitat that supports this plant species are located away from the trail that allows dogs on leash (beyond the 6-foot LOD corridor); dogs on leash on this trail would not be in proximity to this habitat and thus would not likely impact Hickman's potentilla in the LOD area, resulting in negligible impacts in the LOD area.

As a result, this alternative would provide protection for Hickman's potentilla as well as suitable habitat. Overall, assuming compliance with regulations, alternative D would result in negligible impacts on Hickman's potentilla because no measurable or perceptible changes in Hickman's potentilla or suitable habitat would be expected to occur.

Since no commercial dog walking would be allowed and no permits to walk more than three dogs would be issued under alternative D, no impact on Hickman's potentilla from commercial or permitted dog walking would occur.

Cumulative Impacts. Under alternative D, the cumulative impacts on Hickman's potentilla at this park site would be the same as those under alternative B: negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE D CONCLUSION TABLE

Hickman's Potentilla Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Hickman's potentilla	Beneficial, assuming compliance	Negligible cumulative impacts

Alternative E: Most Dog Walking Access / Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same: long-term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Rancho Corral de Tierra is not one of the sites where permits would be issued to walk more than three dogs. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on Hickman's potentilla.

Cumulative Impacts. Under alternative E, the cumulative impacts on potential Hickman's potentilla habitat at Rancho Corral de Tierra would be the same as those under alternative C: negligible.

RANCHO CORRAL DE TIERRA ALTERNATIVE E CONCLUSION TABLE

Hickman's Potentilla Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	The VSCA is within potential habitat that could support Hickman's potentilla; in other areas physical restraint of dogs would protect Hickman's potentilla and potential habitat	No change, assuming compliance	Negligible cumulative impacts

Alternative F: Preferred Alternative. The preferred alternative would allow on-leash dog walking on designated trails in three areas. Trails in Montara include Old San Pedro Mountain Road, LeConte Trail, Corona Pedro Trail, and Farallon Cutoff from the park boundary in the west to the intersection with Corona Pedro Trail. On-leash trails in the El Granada area include the Denniston Ridge Trail between the San Carlos Trail and its intersection with the Clipper Ridge Trail, the Clipper Ridge Trail, the Memorial Loop, the Almeria Trail, and the San Carlos Trail. In the Moss Beach area, on-leash dog walking would be allowed on the Vincente Ridge and Ranchette Trails. There are currently no mapped occurrences of Hickman's potentilla near trails at Rancho Corral de Tierra where dog walking would be allowed under the preferred alternative, but potential habitat is located in the vicinity of dog walking trail areas (URS Corporation 2010, Figure 19). The preferred alternative would also establish a VSCA at Flat Top; however, the area is a former quarry site that does not support Hickman's potentilla. The LOD area would include the trails open to dog walking and the area adjacent to the trail up to 6 feet. Mapped occurrences of Hickman's potentilla habitat is located away from the trail (beyond the 6-foot LOD corridor); dogs on leash on the trail would not be in proximity to this habitat and thus would not likely impact Hickman's potentilla in the LOD area, resulting in negligible impacts in the LOD area.

Dogs would be physically restrained on leash on all roads and trails at this site. As a result, this alternative would provide protection for suitable Hickman's potentilla habitat. Overall, assuming compliance with regulations, alternative B would result in negligible impacts on Hickman's potentilla because no measurable or perceptible changes in the potentilla or suitable habitat would be expected.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, Rancho Corral de Tierra is not one of the sites where permits would be issued to walk more than three dogs. Currently, commercial dog walking use is low at Rancho Corral de Tierra; therefore, commercial dog walking would have negligible impacts on Hickman's potentilla.

Cumulative Impacts. Projects and actions in and near Rancho Corral de Tierra were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on Hickman's potentilla at or in the vicinity of this site. Since the Rancho Corral de Tierra site has been transferred to NPS, general protection of the site and associated natural resources would occur, although some impacts may remain from prior unregulated off-leash dog walking.

Additional actions have had, are currently having, or have the potential to have adverse impacts on wildlife and wildlife habitat at or in the vicinity of Rancho Corral de Tierra, such as development or construction actions. One example is the CalTrans Devil's Slide Tunnel project, which involved constructing two tunnels beneath San Pedro Mountain to provide a dependable highway between Pacifica and Montara (County of San Mateo 2016d, 1). The EIS for this project included minor alignment shifts of the project to circumvent a stand of Hickman's potentilla. As a result, there were no impacts to Hickman's potentilla in the final EIS because Hickman's potentilla was not found within the tunnel alternative corridor or immediate vicinity (FHA and CADOT 2002, 69). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would have negligible cumulative impacts.

Since the Rancho Corral de Tierra site has been transferred to the NPS, general maintenance and protection of the site and associated natural resources have been occurring.

The negligible impacts on suitable Hickman's potentilla habitat from dogs at Rancho Corral de Tierra under the preferred alternative were considered together with the effects of the projects mentioned above. The anticipated beneficial effects from park stewardship programs combined with the negligible impacts

on the Hickman's potentilla habitat from the preferred alternative would result in negligible cumulative impacts.

RANCHO CORRAL DE TIERRA PREFERRED ALTERNATIVE F CONCLUSION TABLE

Hickman's Potentilla Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect suitable habitat for Hickman's potentilla	Beneficial, assuming compliance	Negligible cumulative impacts

CULTURAL RESOURCES

GUIDING REGULATIONS AND POLICIES

The NPS is charged with management and protection of cultural resources through a variety of guidance documents and legislation implemented by NPS managers to avoid or minimize, to the greatest degree practicable, adverse impacts on park resources and values. In addition to the NEPA under which this document has been prepared, the primary regulatory framework for cultural resources managed by the NPS includes:

Director's Order 28, Cultural Resources Management Guidelines (NPS 1998) is the fundamental guidance document for the management of cultural resources located within the national park system and contains park management standards and other requirements for cultural resources.

NPS *Management Policies 2006* outlines NPS management policies for cultural resources including the identification and evaluation of cultural resources, the integration of this information in planning and decision-making, and the stewardship to ensure that cultural resources are preserved and protected (NPS 2006a).

General Management Plan (NPS 1980) provides management guidance for all park resources, including cultural resources. The GMP has undergone revision and updating and was finalized in 2014.

The *National Historic Preservation Act* (NHPA), as amended, functions as the principal legislative authority for management of cultural resources located within national parks—it requires federal agencies to avoid, minimize, or mitigate adverse effects to historic properties related to their undertakings. This impact analysis is designed to comply with the requirements of both NEPA and Section 106 of the NHPA (36 CFR Part 800, Protection of Historic Properties). Impact threshold definitions used for analysis contain statements specifically related to adverse effects as defined in 36 CFR 800. A Section 106 statement follows the conclusion statement for each alternative.

The Advisory Council on Historic Preservation's regulations for implementation of Section 106 require that effects to historic resources be identified and evaluated by determining the area of potential effects (APE, the area of geographic study), identifying cultural resources present within the APE that are either listed on or eligible for listing on the National Register of Historic Places (NRHP), applying the criteria of adverse effect to these cultural resources, and considering ways to avoid, minimize, or mitigate adverse effects to them.

A determination of *no effect*, *no adverse effect* or *adverse effect* must be made for NRHP-listed or NRHP-eligible cultural resources located within the APE. A determination of *no effect* is made when it is found that no historic properties are present or there are historic properties present but the undertaking will have

no effect upon them. A determination of *no adverse effect* results when there is an effect to a property but it would not diminish the characteristics of the cultural resource that qualify it for inclusion in the NRHP. An *adverse effect* occurs when an impact alters any characteristic of a cultural resource that qualifies it for inclusion in the NRHP. *Adverse effects* also include reasonably foreseeable effects caused by the proposal that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800).

STUDY AREA

The APE is determined as the geographic area within which an undertaking may directly or indirectly cause alteration in the character or use of historic properties (36 CFR 800.16(d)) and is described in *Affected Environment, Cultural Resources*. Refer to maps 25 and 26 for related discussion on the designation of the APE and for locational information on cultural resources. The designated APE contains archeological resources, historic structures and cultural landscapes. As the APE is defined by cultural resources boundaries (vs. specific geographic areas as in other resource topics), this section is structured differently than others.

ASSESSMENT METHODOLOGY

As no specific monitoring has occurred at GGNRA to document direct impacts of dogs on the park's cultural resources, analysis of cultural resources is general in nature. It is addressed in terms of ground disturbance in the form of visitor use/dog activity (trampling, digging, etc.) known to exacerbate erosion, which, in turn, can affect the integrity of fragile cultural resources. Impacts assessed here are based on the existence of or reasonably predicted potential for ground disturbance related to visitor/dog activity in sensitive cultural resources areas.

All cultural resources analyzed are either listed on, have been formally determined eligible for, or are expected to be determined eligible for the NRHP.

Area B of the Presidio

Area B of the Presidio is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. Impacts to cultural resources in this area by the various dog management alternatives have been addressed in this section. The Presidio National Historic Landmark (NHL) APE encompasses Area B of the Presidio (map 26).

Context of Impacts

Site-specific. Impacts confined to a specific site, in its immediate vicinity.

Localized. Impacts confined within park boundaries, or areas larger than site-specific.

Duration of Impacts

Duration describes the length of time an effect would occur, either short term or long term. Long-term impacts to cultural resources are described as those persisting for the life of the plan/EIS (the next 20 years). After the implementation of the plan, a 1- to 3-month period of public education would occur to implement the proposed action followed by a 1- to 3-month period testing the monitoring-based management program. At the beginning of the education and enforcement period, short-term impacts on cultural resources would occur, regardless of the alternative chosen and would be similar to the current conditions. Following the education period, monitoring for compliance would begin and it is expected that compliance with the dog walking regulations and associated adverse impacts would improve

gradually and the impacts on cultural resources would then become long term, as described below for each alternative.

THRESHOLDS

Under the NEPA impacts to cultural resources are assessed as either adverse or beneficial. Section 106 of the NHPA requires assessments of effects as either adverse or not adverse (see above discussion). Under both laws, adverse effects are those that negatively affect the integrity of elements important to a cultural resource's significance. Threshold definitions are designed to comply with both NEPA and NHPA requirements.

Archeological Resources

Beneficial The site would be preserved in its natural state, or stabilized in order to prevent future impacts, or active intervention would be taken to preserve the archaeological resources at the site. For purposes of NHPA Section 106, the determination of effect would be *no adverse effect*.

Negligible The impact is at the lowest level of detection or barely measurable, with no perceptible consequences, either adverse or beneficial, to archaeological resources. For purposes of Section 106, the determination of effect would be *no adverse effect.*

Adverse **Minor**. The impact would affect an archaeological site with the potential to yield information important in prehistory or history and/or that holds significance for associated native people, but would not affect portions of the property that had integrity or elements that were pivotal to the site's significance. For purposes of NHPA Section 106, the determination of effect would be *no adverse effect.*

Moderate. The impact would affect an archaeological site with the potential to yield information important in prehistory or history and/or that holds significance for associated native people, and would impact portions of the property that had integrity or elements that were pivotal to the site's significance. For purposes of NHPA Section 106, the determination of effect would be *adverse effect*.

Major. The impact would affect an archaeological site with the potential to yield important information about human history or prehistory and/or that holds significance for associated native people, and would remove sufficient amounts of the resource to the extent that it would no longer have integrity or elements considered significant. For purposes of NHPA Section 106, the determination of effect would be *adverse effect*.

Historic Structures

Beneficial The character-defining features of one or more structures or buildings listed on or eligible for the NRHP would be stabilized or preserved, or rehabilitated, or restored in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties to accurately depict its form, features, and character as it appeared during its period of significance. For purposes of NHPA Section 106, the determination of effect would be *no adverse effect*.

Negligible The impact would cause no alteration to any structures or buildings listed or eligible for listing on the NRHP, or any alterations would be at the lowest level of detection or barely perceptible and not measurable. For purposes of NHPA Section 106, the determination of effect would be *no adverse effect.*

Adverse **Minor**. The impact would not affect the character-defining features of a structure or building listed on or eligible for the NRHP. For purposes of NHPA Section 106, the determination of effect would be *no adverse effect*.

Moderate. The impact would alter a character-defining feature(s) of one or more structures or buildings listed on or eligible for the NRHP, but would not diminish the integrity of the resource to the extent that its NRHP eligibility would be jeopardized. For purposes of NHPA Section 106, the determination of effect would be *adverse effect.*

Major. The impact would alter a character-defining feature(s) of one or more structures or buildings listed on or eligible for the NRHP, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed on the NRHP. For purposes of NHPA Section 106, the determination of effect would be *adverse effect.*

Cultural Landscapes

Beneficial Character-defining features would be preserved, or rehabilitated, or restored in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes, therefore maintaining the integrity of the cultural landscape. For purposes of NHPA Section 106, the determination of effect would be *no adverse effect*.

Negligible The impact would cause no alteration to a cultural landscape listed or eligible for listing on the NRHP, or any alterations would be at the lowest levels of detection or barely perceptible and not measurable. For purposes of NHPA Section 106, the determination of effect would be *no adverse effect*.

Adverse **Minor**. The impact would not affect the character-defining features of a cultural landscape listed on or eligible for the NRHP. For purposes of NHPA Section 106, the determination of effect would be *no adverse effect*.

Moderate. The impact would alter one or more character-defining features of a cultural landscape listed or eligible for listing on the NRHP but would not diminish the integrity of the landscape to the extent that its NRHP eligibility would be jeopardized. For purposes of NHPA Section 106, the determination of effect would be *adverse effect.*

Major. The impact would alter one or more character-defining feature(s) of a cultural landscape listed or eligible for the NRHP, diminishing the integrity of the resource to the extent that it would no longer be eligible to be listed on the NRHP. For purposes of NHPA Section 106, the determination of effect would be *adverse effect*.

Cumulative Effects Analysis

CEQ regulations for the implementation of NEPA require the assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as the "impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions" (40 CFR 1508.7). Cumulative impacts are addressed for all alternatives, including the no-action alternative.

The NHPA also directs agencies to assess cumulative effects to cultural resources related to an undertaking. These effects are described as adverse effects which include "reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or cumulative" (36 CFR 80.5(a)(1)).

IMPACTS ANALYSIS

Refer to maps 25 and 26 and appendix I for locations of cultural resources included in this analysis.

ALTERNATIVE A: NO ACTION

Archeological Resources

Muir Beach. The pre-contact archeological site at Muir Beach (CA-MRN-333) contains both surface and subsurface deposits. Currently dogs are allowed in the Muir Beach area under voice control. Many local residents allow their dogs to run free throughout the area and visitation with dogs is highest on weekends. Slopes in the Muir Beach area are prone to land-sliding and soil erosion, both of which are evident in the area (see the "Soils" section in chapter 3).

Lands End. The two pre-contact Point Lobos archeological sites (CA-SFR-5, CA-SFR-21) are located at the southern end of Lands End in a general area where dogs are permitted under voice control. Use of the area by visitors with dogs is low to moderate. Much of the area has been modified by excavations, cuts, and fill; rilling and gully erosion is evident in some areas. Though there are areas where artifacts are exposed on the ground surface, the two archeological sites are relatively protected by existing native vegetation planted specifically for their protection. One is fenced but not in a manner that would preclude visitor or dog traffic.

The three archeological sites are considered relatively stable and their conditions are monitored periodically by park staff. The continuing dog under voice control activity in both the Muir Beach and Lands End areas under the no-action alternative would likely result in negligible to long-term, minor, adverse, site-specific impacts to the park's cultural resources, primarily related to potential for dog-related activity in the general voice control area. For the purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Historic Structures

Permanent Seacoast Fortifications and Their Integral Earthworks (Fort Baker, Fort Scott, Fort Point, Fort Mason, Fort Miley, and Fort Funston). Dogs are currently allowed under voice control and on-leash in areas where seacoast fortifications and their integral earthworks are located—the Forts Baker, Barry, and Cronkhite Historic District (Fort Baker); the Presidio NHL (Forts Scott and Point); Fort Mason Historic District; Fort Miley Military Reservation; and Battery Davis at Fort Funston (see appendix I). Under the no-action alternative, dog activity in these areas varies from high (including commercial dog walkers with

multiple dogs) at places like Fort Funston, to less intense dog activity in other areas such as the Fort Miley Military Reservation. High use of an area by visitors with dogs has the potential to negatively affect sensitive seacoast fortification earthworks (trampling, digging). The potential for negative impacts is exacerbated where these resources occur in areas characterized by sandy, unstable soils (e.g., coastal areas of Fort Scott within the Presidio NHL). Compounding this is the fact that many park trails run immediately adjacent to the batteries (e.g., areas within Forts Scott and Point within the Presidio NHL; Fort Baker within the Forts Baker, Barry, and Cronkhite Historic District), as well as through them as is the case at Fort Funston (Battery Davis).

In general, the park's permanent seacoast fortifications are considered to be in good condition. Still, ground disturbance by dogs can exacerbate natural erosion processes and ultimately affect the overall integrity of the park's seacoast fortification resources. Dogs can also trample/kill vegetation and cause increased compaction in highly used areas. Both contribute to erosion and increased runoff.

Under the no-action alternative, the on-going impact of dog activity on permanent seacoast fortifications and their integral earthworks is believed to range from negligible to long-term, minor, site-specific (possibly localized), adverse impacts. These impacts are possible where dogs are allowed under voice control, where there is easy access by dogs to sensitive resources, and where resources are located in unstable soils (e.g., Fort Funston [Battery Davis], Fort Scott within the Presidio NHL). For the purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Crissy Airfield. Under the no-action alternative dogs are allowed under voice control at Crissy Airfield (Presidio NHL) where use by visitors with dogs is considered moderate to high, including commercial dog walkers with multiple dogs. Park staff have reported that the area requires a high level of maintenance related to dog waste, urination, etc. Violations of the leash law in this general area are common and constitute the overwhelming majority of dog-related citations issued to visitors (table 10). Currently, the airfield does not exhibit signs of dog-related impacts. A 1921 signal cable hut (building 946) near Crissy Airfield is currently partially buried and appears unaffected by dog activity. Continued use of the Crissy Airfield area under the no-action alternative is expected to result in negligible site-specific impacts to the resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Cultural Landscapes

Forts Baker, Barry, and Cronkhite Historic District. Cultural resources located within the Forts Baker, Barry, and Cronkhite Historic District that would be affected by the plan include field fortifications and earthwork portions of permanent seacoast fortifications. Adverse impacts to the earthwork portions of seacoast fortifications range from negligible to long-term minor (see Historic Structures analysis above).

Field Fortifications. An NPS (n.d.f) study designed to identify and preliminarily evaluate field fortifications in the vicinity of Fort Cronkhite has resulted in the location of these resources in relatively close proximity to several trails and roads located to the north of the Fort's cantonment area (i.e., Wolf Ridge). In this area (Rodeo Beach/Marin Headlands), dogs are allowed both on-leash and under voice control on designated sections of the Coastal Trail. In the same general area, dogs under voice control are allowed on sections of the Miwok and Wolf Ridge Trails, as well as along Old Bunker Fire Road. Dog use is not heavy on these trails with the exception of the loop trail that includes sections of the Coastal, Wolf Ridge and Miwok Trails. Much of the off-trail terrain is steep and visitors and dogs tend to stay on-trail. Field fortifications in this area are considered fragile and documentation is incomplete. Some are protected to a degree by thick vegetation. Soils in the general area of the crest of Wolf Ridge are loose and sandy (see the "Soils" section of chapter 3).

Violations of the leash law constitute the greatest number of dog-related citations issued to visitors in this area (table 10). While off-trail traffic tends to be low due to topography and vegetation, it is permitted in much of this area and its occurrence can contribute to ground disturbance around these fragile resources (see related discussion, Permanent Seacoast Fortifications and Their Integral Earthworks, Historic Structures analysis, above). Adverse impacts to field fortifications under the no-action alternative are likely to be no greater than negligible to long-term minor and localized related to the fact that most visitor/dog use is on-trail due to topography and vegetation. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Seacoast fortifications and their integral earthworks, as well as field fortifications contribute to the significance of the district's association with the history of coast defense in the San Francisco Bay area and impacts to them have the potential to affect its overall integrity and NRHP status. Adverse impacts expected to these contributing cultural resources within the Forts Baker, Barry, and Cronkhite Historic District range from negligible to long-term minor and are not believed to have the potential to jeopardize its NRHP status. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Presidio of San Francisco National Historic Landmark. The NRHP status of the Presidio NHL is related to its numerous contributing historic, architectural and archeological resources associated with important events in American history. Contributing cultural resources located within the Presidio NHL that would be affected by the plan include field fortifications (Fort Scott), the U.S. Coast Guard Station Historic District, earthwork portions of seacoast fortifications, and Crissy Airfield. Adverse impacts to earthwork portions of seacoast fortifications and Crissy Airfield range from negligible to long-term minor; the Section 106 NHPA assessment would be *no adverse effect* (see Historic Structures analysis above).

Field Fortifications. Numerous field fortifications associated with WW II batteries at Fort Scott have been documented along Baker Beach and north to the Golden Gate Bridge (Martini n.d.b). Under the no-action alternative, dogs are prohibited along the Batteries to Bluffs Trail; dog walking is allowed under voice control along Baker Beach and on leash along the Coastal Trail that runs adjacent to some of these sensitive resources. As an example, the immediate area around Battery Chamberlin is considered to have a high potential for yielding important data related to these historic fighting positions (Martini n.d.b). These fortifications are particularly fragile, having been constructed in sandy soils that are very vulnerable to erosion (see the "Soils" section of chapter 3). The same potential for yielding important data are also true for areas of the Coastal Trail between Baker Beach and the Golden Gate Bridge.

Use of the area for dog walking is considered low to moderate (table 10). Dogs have been observed off-trail creating the potential for increased ground disturbance and erosion resulting in loss of resource integrity (see related discussion, Permanent Seacoast Fortifications and Their Integral Earthworks, Historic Structures analysis, above). Adverse, localized impacts to field fortifications in this area are expected to range from negligible to long-term minor. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

U.S. Coast Guard Station Historic District. In the recent past, some of the individual juniper plantings within the U.S. Coast Guard Station's perimeter hedge have died and dog urine is believed to have contributed to the loss of at least one plant. The park plans to replace these missing plants to re-establish the continuity of the original hedge. Currently, dogs are prohibited from the U.S. Coast Guard Station property; however, dogs under voice control are allowed in immediately adjacent areas including the Crissy Airfield promenade and Crissy Airfield, which border the southern extent of the U.S. Coast Guard Station.

The general area of the U.S. Coast Guard Station Historic District receives moderate to high use by visitors with dogs, including commercial dog walkers with multiple dogs. Violations of the leash law in this general area are common and constitute the overwhelming majority of dog-related citations issued to visitors (table 10). Park staff have reported that maintenance needs related to dog waste in the area are high. Under the no-action alternative, these conditions are expected to continue resulting in the potential need for the replacement of additional vegetation related to dog activity. This is considered a negligible to possibly long-term, minor, adverse, site-specific impact to the U.S. Coast Guard Station Historic District. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Collectively, adverse impacts expected to contributing resources within the Presidio NHL would range from negligible to long-term minor under the no-action alternative and are not believed to have the potential to jeopardize its NRHP status. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Fort Mason Historic District. Batteries Burnham and Black Point are located within this Historic District and their integral earthwork components have the potential to be affected by dog activity. These resources contribute to the district's overall significance and adverse effects to them can affect its NRHP status. Though only on-leash dog walking is currently allowed at Fort Mason, dogs can often be observed running without a leash. Dogs have been observed digging around earthwork portions of seacoast fortifications. Use by visitors with dogs is considered low to moderate and includes commercial dog walkers with multiple dogs (table 10). As presented above (see Historic Structures analysis), potential adverse impacts to the earthwork portions of the seacoast fortifications are negligible to long-term minor under the no-action alternative. Impacts to the overall Fort Mason Historic District would be expected to result in no greater than negligible to long-term, minor, localized adverse impacts and are not believed to have the potential to jeopardize its NRHP status. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Fort Miley Military Reservation. Several seacoast fortifications and their earthwork components located within this Historic District have the potential to be affected by dog activity (Batteries Livingston-Springer, BBC #243, Chester) (appendix I). These resources contribute to the District's overall significance and adverse effects to them can affect its NRHP status. Dogs are currently allowed under voice control on the east and west sides of Fort Miley. Use by dog walkers is low (table 10). As presented above (see Historic Structures analysis), potential adverse impacts to the earthwork portions of the seacoast fortifications are considered negligible to long-term minor under the no-action alternative. Consequently, impacts would be expected to result in no greater than negligible to long-term minor, localized adverse impacts to the overall Fort Miley Military Reservation and are not believed to have the potential to jeopardize its NRHP status. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect.*

Rancho Corral de Tierra. This site may be potentially eligible for listing on the NRHP for ties to the history of ranching operations dating back to the Mexican rancho era. This site includes landscape features, structures, and archeological sites, including the Francisco Guerrero Adobe Site, and the Martini Creek Ohlone sites (NPS 2011b, 105). On-leash dog walking at this site would result in a negligible impact to these resources. Although dogs are regularly observed off leash at the site and compliance with leash laws at the site is considered low, no eligible historic resources are found at the site and visitor use numbers are low to moderate, so impacts to cultural resources would remain negligible. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Commercial Dog Walking

Under alternative A, no permit system exists for dog walking. At Muir Beach, Lands End, Fort Miley, Fort Baker, Marin Headlands Trails, Fort Point, and Baker Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would not have an impact on cultural resources. Commercial dog walking is currently considered to be low to moderate at Fort Mason and high at Crissy Airfield and Fort Funston. Commercial dog walkers with multiple dogs under voice control would impact cultural resources through ground disturbance, and would contribute to erosion around these fragile resources. Commercial dog walking would continue to contribute to the negligible to long-term minor adverse impacts to cultural resources in these areas. For purposes of Section 106 of the NHPA, the assessment associated with commercial dog walking is *no adverse effect.*

Cumulative Impacts

Archeological/Ethnographic Resources

The Big Lagoon wetland and creek restoration project in Marin County includes a cultural resource goal "to incorporate cultural heritage values and sites of the Coast Miwok into the restoration design, visitor experience, and long term management of the project area" (NPS 2007b, 2-12). It is the park's intent to integrate elements of the cultural ecology of the Coast Miwok into the design, management and interpretation of the restoration project. This will be accomplished through consultation with the Federated Indians of Graton Rancheria regarding archeological, ethnographic and ethnohistoric data. The analysis and interpretation of the cultural ecology of some of the prior inhabitants of the area would likely result in a cumulative benefit for the park's cultural resources.

Historic Structures

Permanent Seacoast Fortifications and Their Integral Earthworks. A number of seacoast fortifications located along the coastline of GGNRA have undergone extensive study over the past 20 years (see chapter 3 for more detail). While some of these resources, particularly earlier ones, have been lost to natural erosion or later redevelopment, many still exist under park protection. The park currently manages numerous remaining structures, most of which are "well-preserved examples of nearly every important development in military fortification engineering from before the Civil War to the guided missile era" (Freeman et al. 1999). Many of these structures have been determined eligible for the NRHP and often contribute to the significance of larger Historic Districts or NHLs that could be affected by this management plan (Fort Miley; Fort Mason; Forts Baker, Barry, and Cronkhite; the Presidio NHL). The entire seacoast fortification network at GGNRA is currently being nominated as a NHL and is being managed as such until official determination is complete (Freeman et al. 1999). Such management offers protection of these fragile and important resources and provides localized benefits to historic structures within the park.

Cultural Landscapes

Forts Baker, Barry, and Cronkhite Historic District. In the recent past, the management of a number of military bases/forts has been transferred from other federal ownership to GGNRA. As the NPS is mandated to preserve and protect these historic resources, GGNRA employs a variety of options to accomplish this such as adaptive use by park partners. Partnering with other groups for the use of such structures provides continued life and maintenance of the structures and landscapes. In addition, a variety of guidance documents (e.g., cultural landscape reports, cultural landscape inventories) focused on these significant historic cultural resources have been completed. These documents consolidate existing research, evaluate cultural landscape elements, and provide recommendations for future maintenance and

use of the properties. These studies address specific elements of the Forts Baker, Barry, and Cronkhite Historic District including, among others, such as Fort Baker (NPS 2005d), Fort Barry (NPS n.d.g), Fort Cronkhite (NPS 2008f) (see chapter 3). Such efforts further the continued and appropriate use of these historic resources and result in a cumulative benefit to the cultural resources of the Forts Baker, Barry, and Cronkhite Historic District.

In addition, rehabilitation/reuse of historic army forts within the Forts Baker, Barry, and Cronkhite Historic District has or could result in benefits to the District resources. For instance, the Fort Baker Plan (NPS 2008h) involves the rehabilitation of numerous historic structures for a conference center. These efforts also include landscape improvements such as restoration of the historic Fort Baker parade grounds. The Headlands Institute Improvement and Expansion Plan (NPS 2009b) would rehabilitate some historic structures and possibly construct new ones within Fort Cronkhite for a field science education program. While the majority of cumulative impacts to the District related to these actions are expected to be beneficial as related to restoration, rehabilitation and preservation of historic fort elements, several actions (e.g., construction-related ground disturbance, introduction of visually intrusive elements) have or could result in negligible to possibly long-term minor cumulative adverse impacts for some district resources.

Adverse impacts to the Forts Baker, Barry, and Cronkhite Historic District related to transportation projects occurred before and after the NPS took jurisdiction over GGNRA parklands and similar impacts are likely to occur to some degree in the future. For example, the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan EIS* (NPS 2009c) is expected to result in a variety of adverse impacts to the District's cultural resources related to modifications to a number of sensitive, character-defining features of historic roadways within the Marin Headlands. In general, transportation projects have and are likely to result in long-term minor to possibly moderate cumulative adverse impacts to the Forts Baker, Barry, and Cronkhite Historic District resources.

Recent improvements to the Marine Mammal Center located just northeast of Fort Cronkhite in the Forts Baker, Barry, and Cronkhite Historic District have resulted in long-term minor cumulative adverse impacts to the District, primarily related to modifications of the landscape's viewshed.

Battery Cavallo Preservation and Interpretation Plan. Battery Cavallo is located within Fort Baker and dates to the early 1870s. Increased visitation to Fort Baker in the 1970s and 1980s resulted in uses of the battery area in ways that had the potential to impact the structure's integrity. In recent years, access to the battery has been restricted, enhancing preservation of the resource (Martini, n.d.c). Battery Cavallo was part of the nomination prepared for Forts Baker, Barry and Cronkhite historic district and is considered a contributing resource. A preservation plan for Battery Cavallo is currently in its draft stage and has the potential to provide cumulative benefits to Battery Cavallo through enhanced preservation actions.

Presidio National Historic Landmark. As is the case for the Forts Baker, Barry, and Cronkhite Historic District, the U.S. Coast Guard Station Historic District, located within the larger Presidio NHL, has benefitted from the transfer to park ownership/management. These benefits derive primarily from the fact that the park is actively involved with the continued life and maintenance of the structures and landscapes within the Presidio, as well as the park's provision of guidance documents for the NHL's appropriate management (e.g., NPS 2006f). These efforts result in cumulative benefits for the Presidio NHL.

Adverse impacts to the resources of the Presidio NHL related to transportation projects have occurred in the past and similar impacts are likely to continue to occur to some degree into the future. As an example, construction of the Golden Gate Bridge in the 1930s resulted in "drastic changes to much of Fort Winfield Scott and other parts of the Presidio" including partial demolition of portions of Batteries Lancaster and East (Martini n.d.a, 36; Freeman et al. 1999). In general, transportation projects have and are likely to

result in long-term minor to possibly moderate cumulative adverse impacts to the Presidio NHL resources.

Future plans for trail realignment projects along Baker Beach and the bluffs north of it (Coastal Trail, Batteries to Bluff Trail) have the potential to affect the cultural resources of the Presidio NHL in the future. In particular, there are a number of fragile field fortifications (machine gun pits, encampments, etc.) located immediately adjacent to many of the WW II batteries in this area (e.g., Chamberlin, Crosby, Godfrey) (Martini n.d.b). These resources are located in unstable sandy soils and are vulnerable to erosion. The details of the specific trail realignment activities are unknown at this time but it is anticipated that trail design will, under the NHPA assessment, result in *no adverse effects* to these resources.

The PTMP was adopted in 2002 and includes the preservation of the Presidio's cultural, natural, scenic, and recreational resources in Area B, managed by the Presidio Trust. The PTMP focuses on the long-term preservation of the park, including replacing pavement with green space, improving and enlarging the park's trail system, restoring stream corridors and natural habitats, and reusing historic structures (Presidio Trust 2002, 3). The Presidio Main Post Update to the PTMP defines projects designed to interpret the Presidio's history, including a new Archeology Center in Area B (Presidio Trust 2010b, 2). The Update includes more building space for public uses than originally identified in the PTMP. The update also includes the employment of green practices in historic building and landscape rehabilitation efforts and in ongoing maintenance (Presidio Trust 2010b, 2). The Main Parade Ground Rehabilitation project consists of the rehabilitating the red brick buildings, which includes paving, grading, relocating utilities, and addressing drainage necessary for a relocated parking lot and a new lawn area (Presidio Trust 2010c, 1). Therefore the various renovation projects under the PTMP and the Presidio Main Post Update would have a cumulative beneficial impact to the cultural landscapes of GGNRA sites.

Fort Mason Historic District. Ownership and management of this District is addressed in the Fort Mason Historic District Cultural Landscape Inventory (NPS 2004a). The management of Fort Mason Historic District is similar to that described under the Forts Baker, Barry, and Cronkhite Historic District and Presidio NHL discussions above, resulting in comparable cumulative benefits for the Historic District.

Fort Miley Military Reservations. Fort Miley dates to the 1890s and, historically, consisted of three distinct complexes of structures—western, central and eastern segments (see discussion in chapter 3). The central portion of the Fort was demolished in 1934 to make way for construction of a VA hospital. As a result, this portion of Fort Miley no longer possesses integrity and is excluded from the existing Historic District boundaries. In fact, it is no longer a part of the GGNRA parklands and is administered by the VA. While the loss of the integrity of the central portion of Fort Miley decades ago can be considered a minor adverse impact to the military reservation, its current management of remaining seacoast fortifications on the east and west sides of the Fort can be considered a cumulative benefit to cultural landscapes of the park (see Historic Structures, above).

Cumulative Impacts Conclusion

Overall, cumulative impacts of other park projects and actions to cultural resources include benefits primarily related to preservation and enhancement efforts. The proposed GGNRA interim compendium amendment would require commercial dog walkers in San Francisco and Marin counties to obtain a permit to walk more than three dogs at GGNRA sites, with a limit of six dogs. This would have beneficial impacts on cultural resources in the park. Cumulative adverse impacts from other park projects and actions range from negligible to possibly moderate and are related to ground disturbance (transportation, construction activities), impacts to views and vistas associated with cultural landscapes, and historic

structure demolition. However, impacts to cultural resources under the no-action alternative are not expected to contribute to these adverse cumulative impacts.

ALTERNATIVE A CONCLUSION TABLE

Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible to long-term minor site-specific adverse impacts to archeological resources; negligible to long-term minor, site-specific and localized adverse impacts to historic structures; and negligible to long-term minor localized adverse impacts to cultural landscapes	Impacts related primarily to dog-related ground disturbance, which increases erosion and potentially results in negative effects to archeological sites, historic structures and cultural landscapes	Beneficial cumulative impacts related to preservation and enhancement efforts Negligible to long-term, moderate, adverse cumulative impacts related to ground disturbance (transportation, construction activities), impacts to views and vistas associated with cultural landscapes, and historic structure demolition	N/A
For purposes of Section 106 of the NHPA, the continuation of actions under the no-action alternative would result in *no adverse effects* to cultural resources			

N/A = not applicable.

ELEMENTS COMMON TO ALL ACTION ALTERNATIVES (B THROUGH F)

Fencing. Under all action alternatives, the perimeters of Batteries Davis (Fort Funston) and East (Fort Point within the Presidio NHL) would be fenced as a protective measure. The fencing would consist of post and wire fencing (approx. 4-inch square mesh, figure 7), is designed to be visually unobtrusive to the historic scene, would serve as an effective barrier to visitors and dogs, and is reversible.

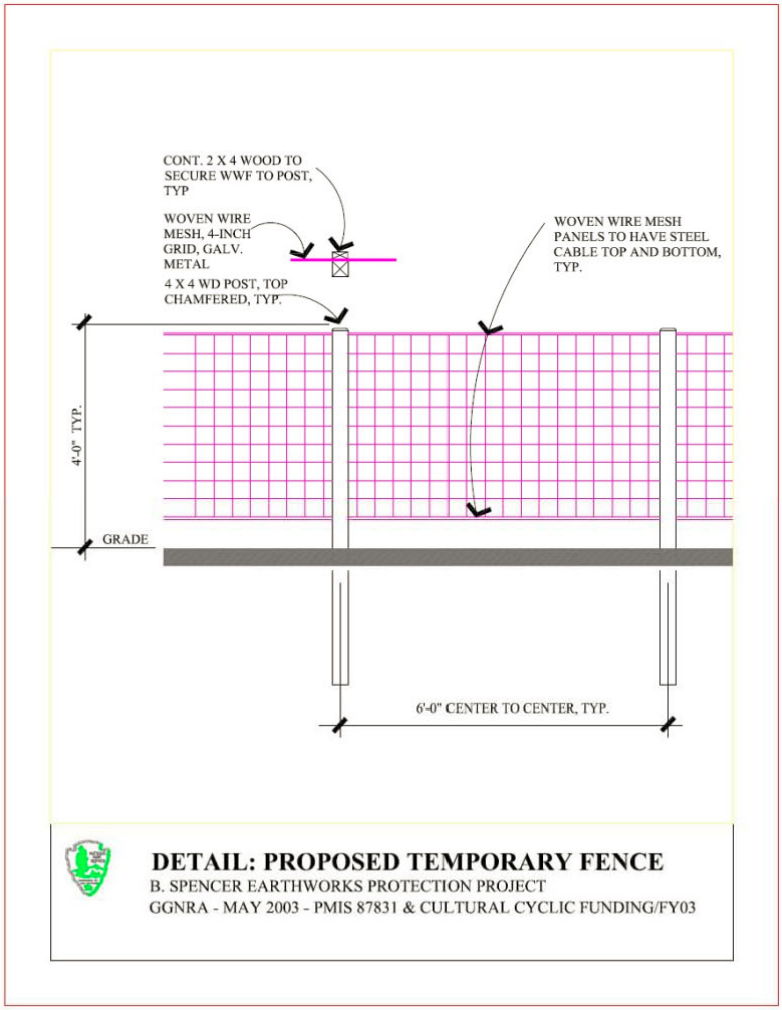


FIGURE 7. EXAMPLE OF FENCING DESIGN TO BE INSTALLED AT BATTERIES DAVIS AND EAST

Installation of fencing at Batteries East and Davis would ultimately contribute to the protection of the earthworks that are integral to these historic structures in that future ground disturbance by visitors with dogs would be minimized—a beneficial, site-specific impact. At the same time, fence construction would result in some ground disturbance related to post installations—a negligible site-specific impact to the resources. For purposes of Section 106 of the NHPA, both actions would result in an assessment of *no adverse effect* for the individual resources, as well as for the Presidio NHL (Battery East).

Dog Walking. Under all action alternatives, dog walking would be allowed only in designated on-leash areas or VSCAs in park locales that are not considered sensitive resource areas. The on-leash dog walking designation requires walkers to have full control of their dog(s) through a physical restraint with a leash no longer than 6 feet. VSCAs are defined spaces with distinct boundaries where dog walking would be allowed under specific guidelines, which includes voice and sight control. At no time would dogs be allowed in no-dog areas in any portion of the park. This would include the Batteries to Bluffs Trail north of Baker Beach within the Presidio NHL where a number of sensitive historic structures (earthwork portions of seacoast fortifications, field fortifications) occur.

Confining dogs to trails and VSCAs throughout the park is a notable difference from the current situation and would be expected to result in a decreased potential for trampling and ground disturbance of sensitive

cultural resource areas (e.g., archeological sites, earthwork portions of seacoast fortifications, field fortifications) by visitors with dogs. This constitutes a beneficial, localized impact to cultural resources, particularly in those park areas where voice and sight control zones are large and ground disturbance is damaging to cultural resources (e.g., Fort Funston, Baker Beach within the Presidio NHL). However, due to the possibility of a dog disturbing a sensitive cultural area since dogs would be allowed near these sensitive historic structures, a negligible impact could possibly result. Any alteration to a sensitive historic structure from a dog either on a leash or in a VSCA would be at the lowest level of detection or barely perceptible and not measurable. For the purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Unanticipated Historic Properties. The monitoring-based management program described in chapter 2 would allow staff to monitor and record noncompliance as well as impacts to cultural resources, including unanticipated historic properties that may yet be discovered. Monitoring would include training to ensure recognition of previously unidentified sites that are likely to primarily consist of indigenous sites or temporary military field fortifications. If unanticipated historic properties are discovered in dog walking areas, then management actions would include documentation and assessment of significance, and development of treatment recommendations to ensure the long-term integrity of the site. If the area has been surveyed and the resource is not eligible for listing, park staff would take no further action under NHPA Section 106, but may implement protection measures. If the area has not been surveyed, or if the area has been surveyed but the significance of the particular resource is unclear, the State Historic Preservation Office (SHPO) would be contacted to determine the next steps. As appropriate, the park would implement additional measures to protect the resource from further impact.

Outreach and Education/Partnerships. Under all action alternatives, the park would establish a long-term outreach campaign (visitor centers, website, etc.) to educate the public about the selected alternative and what it would mean for dog regulations. The park would include stakeholder groups and members of the public who were part of the development of the plan to help to disseminate information on the new regulation. By so doing, the park would enhance the likelihood of compliance with the new regulation and, thereby, further the preservation of cultural resources by limiting trampling and ground disturbance by visitors with dogs. This is viewed as a localized benefit to the park's cultural resources. For the purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

ALTERNATIVE B: NPS LEASH REGULATION

Archeological Resources

Muir Beach and Lands End. Under alternative B, only on-leash dog walking would be allowed on beaches and designated trails within the general areas where the Muir Beach (CA-MRN-333) and Lands End Point Lobos (CA-SFR-5; CA-SFR-21) archeological sites are located. As none of the three analyzed archeological sites are located within or close to these areas, they are not expected to incur any dog-related impacts. Under this alternative, these on-leash requirements provide considerable protection from adverse dog-related activity to these cultural resources and result in a negligible impact to the park's archeological resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Historic Structures

Permanent Seacoast Fortifications and Their Integral Earthworks (Fort Mason, Fort Baker, Fort Scott, Fort Point, Fort Funston, Fort Miley). Under alternative B, dog walking occurs in most areas of sensitive earthwork portions of seacoast fortifications—Fort Mason Historic District, Forts Baker, Barry, and Cronkhite Historic District, the Presidio NHL, and Fort Funston (see appendix I)—would be

restricted to on-leash dogs only (appendix I). These areas include beaches, trails, some larger common areas (parade grounds), and parking lots. With the exception of Battery Davis (Fort Funston) where a trail runs through the battery, these on-leash areas do not include direct access to the earthwork portions of the seacoast fortifications. Dogs would be prohibited altogether from the Fort Miley Military Reservation area. These prohibitions and restrictions provide a greater level of protection for these fragile resources by reducing potential dog-related trampling and ground disturbance resulting in a range of negligible to beneficial impacts to park historic structures. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Crissy Airfield. Under alternative B, only on-leash dog walking would be allowed at Crissy Airfield (Presidio NHL). Currently, the airfield does not exhibit signs of dog-related impacts. A 1921 signal cable hut (building 946) near Crissy Field is currently partially buried and appears unaffected by dog activity. A further reduction in the potential for dog-related impacts (ground disturbance) would be a positive factor for cultural resources. The actions proposed under alternative B would result in a negligible, site-specific impact to cultural resources. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Cultural Landscapes

Forts Baker, Barry, and Cronkhite Historic District. Cultural resources located within the Forts Baker, Barry, and Cronkhite Historic District that would be affected by the plan include field fortifications and earthwork portions of seacoast fortifications (appendix I). Impacts to the earthwork portions of seacoast fortifications are expected to be range from negligible to beneficial; the Section 106 assessment would be *no adverse effect* (see Historic Structures analysis above).

Field Fortifications. Under alternative B, dogs would be prohibited from all Marin Headlands trails where many of the fragile field fortifications are located in sandy, unstable soils in the general area north of Fort Cronkhite. Eliminating dog activity from this area is considered a positive step in the preservation of these resources related to the decreased potential for ground disturbance resulting in a localized benefit to the park's cultural resources. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Both field fortifications and earthwork portions of seacoast fortifications contribute to the NRHP status of the Forts Baker, Barry, and Cronkhite Historic District. Under this alternative, on-leash dog walking would be allowed at Fort Baker on-trail and on the parade ground (away from the earthwork portions of seacoast fortifications) (see Historic Structures analysis above); dogs would be prohibited from the Marin Headlands where fragile field fortifications are located. Collectively this would result in reduced dog-related trampling and ground disturbance to these fragile resources resulting in negligible to beneficial impacts to the Forts Baker, Barry, and Cronkhite Historic District. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Presidio of San Francisco National Historic Landmark. Cultural resources located within the Presidio NHL that contribute to its significance and could be affected by dog management actions include field fortifications at Fort Scott, the U.S. Coast Guard Station Historic District, earthwork portions of seacoast fortifications, and Crissy Airfield (appendix I). Negligible impacts to earthwork portions of seacoast fortifications and Crissy Airfield are expected; the Section 106 assessment would be *no adverse effect* (see Historic Structures analysis above).

Field Fortifications. These fragile resources are located primarily along a coastal area from Baker Beach north to the Golden Gate Bridge within Fort Scott. Under alternative B, only on-leash dog walking would be allowed along the beach, trails, picnic area and parking lots in the Baker Beach to Golden Gate Bridge

area. This area is one of high cultural sensitivity with numerous field fortifications present, particularly in the vicinity of Batteries Chamberlin, Crosby and Godfrey (Martini n.d.b). The field fortifications have been constructed in sandy/unstable soils and are considered fragile. As a result, ground disturbance can result in erosion and negative impacts to these resources. Restricting dogs to an on-leash presence in this area would minimize the potential for trampling and ground disturbance in areas on/around cultural resources resulting in a benefit to the park's cultural resources. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

U.S. Coast Guard Station Historic District. Under alternative B, dog walking on-leash would be allowed along the promenade (Crissy Field) on the southwest border of the Historic District. Vegetation that helps to define the original formal design and the edges of the property has been negatively affected in the past by dogs (urination killing vegetation), many of which are dogs under voice control. On-leash requirements under alternative B are expected to result in a negligible impact to the historic district. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Under alternative B, negligible to beneficial impacts are expected for the field fortifications within Fort Scott, the U.S. Coast Guard Station Historic District, and several contributing historic structures within the Presidio NHL (see Historic Structures analysis above). These impacts are associated with the requirement that dogs be leashed in these areas, thereby minimizing the potential for trampling and ground disturbance, which can exacerbate erosion. Collectively, dog management actions under alternative B that will affect the Presidio NHL are expected to result in negligible impacts for the NHL. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Fort Mason Historic District. Cultural resources located within the Fort Mason Historic District that contribute to its significance and could be affected by dog management actions include earthwork portions of seacoast fortifications (Burnham, Black Point—see Historic Structures analysis above) (appendix I). Under alternative B, only on-leash dog walking would be allowed in parking and common areas (sidewalks, parade grounds, Laguna Green, Great Meadow, etc.). The restriction to on-leash dog walking at Fort Mason would minimize the potential for dog-related trampling and ground disturbance to these cultural resources and would result in a negligible impact to the Historic District. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Fort Miley Military Reservation. Cultural resources located within the Fort Miley Military Reservation that contribute to its significance and could be affected by dog management actions include earthwork portions of seacoast fortifications (Batteries Chester, Livingston-Springer, BC #243; see Historic Structures analysis above) (appendix I). Under alternative B, dogs are prohibited in the areas of Fort Miley where these seacoast fortifications are located—a benefit to the Historic District. For purposes of Section 106 of NHPA, the assessment would be *no effect*.

Rancho Corral de Tierra. This site may be potentially eligible for listing on the NRHP for ties to the history of ranching operations dating back to the Mexican rancho era. This site includes landscape features, structures, and archeological sites, including the Francisco Guerrero Adobe Site, and the Martini Creek Ohlone sites (NPS 2011b, 105). The continued requirement for dogs to be on leash where they are allowed would result in a negligible impact to these resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Commercial Dog Walking

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking is not common at Muir Beach, Lands End, Fort Baker, Fort Point, and Baker Beach, it is likely

that the new regulation would not have an impact on the number of dog walkers. The percentage of commercial dog walkers is considered low to moderate at Fort Mason and high at Fort Funston and Crissy Field; however since dog walking would not be permitted near cultural resources, it is unlikely that commercial dog walking at these sites would create impacts to cultural resources. Overall, dogs walked by commercial dog walkers would create negligible impact to the park's cultural resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Since dogs would not be allowed on the trails at Marin Headlands Trails or at Fort Miley, there would be no impact from commercial dog walkers to cultural resources. For purposes of Section 106 of NHPA, the assessment would be *no effect.*

Cumulative Impacts

Cumulative effects to cultural resources resulting from other park projects and actions are similar to those described under alternative A. The proposed GGNRA interim compendium amendment would have beneficial impacts on cultural resources in the park. Cumulative adverse impacts from other park projects and actions range from negligible to possibly moderate and are related to ground disturbance (transportation, construction activities), impacts to views and vistas associated with cultural landscapes, and historic structure demolition. However, impacts to cultural resources under the no-action alternative are not expected to contribute to these adverse cumulative impacts.

ALTERNATIVE B CONCLUSION TABLE

Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts to archeological resources Negligible to beneficial impacts to historic structures and cultural landscapes For purposes of Section 106 of the NHPA, the assessment for alternative B would be *no adverse effects* to cultural resources	Outcomes are related primarily to the reduction in or prohibition of dog activity (trampling, ground disturbance, erosion) in areas of sensitive cultural resources	Beneficial cumulative impacts related to preservation and enhancement effort Negligible to long-term, moderate, adverse cumulative impacts related to ground disturbance (transportation, construction activities), impacts to views and vistas associated with cultural landscapes, and historic structure demolition	Beneficial to no change for archeological resources; benefits and negligible changes for historic structures and cultural landscapes

ALTERNATIVE C: EMPHASIS ON MULTIPLE USE – BALANCED BY COUNTY

Archeological Resources

Muir Beach and Lands End. Under alternative C, only on-leash dog walking would be allowed on beaches, designated trails and parking lots within the general areas where the Muir Beach (CA-MRN-333) and Lands End Point Lobos (CA-SFR-5, CA-SFR-21) archeological sites are located. Impacts to archeological resources would be similar to those described under alternative B—negligible. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Historic Structures

Permanent Seacoast Fortifications and Their Integral Earthworks (Fort Mason, Fort Scott, Fort Baker, Fort Point, Fort Funston, Fort Miley). Under alternative C, on-leash dog walking is proposed in

general areas where seacoast fortifications and their integral earthworks are located at Fort Mason Historic District; Forts Baker, Barry, and Cronkhite Historic District; the Presidio NHL, Fort Miley Military Reservation; Battery Chamberlin, Baker Beach; and Fort Funston (see appendix I). These areas include beaches, trails, some larger common areas (parade grounds), and picnic and parking areas but do not include direct access to the earthwork portions of seacoast fortifications. While VSCAs are proposed at Fort Mason Historic District and Fort Funston and in the general area north of Fort Miley Military Reservation (but not within Reservation boundaries), none are located in the immediate areas where sensitive seacoast fortification earthworks occur. The proposals under alternative C (on-leash, VSCAs located away from sensitive resources, etc.) would provide an added level of protection to these fragile resources by reducing the potential for dog-related trampling and ground disturbance resulting in a range of negligible to beneficial impacts to the park's historic structures. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Crissy Airfield. A VSCA is proposed for the inner portion of Crissy Airfield under alternative C. Currently, dogs under voice control are allowed at Crissy Airfield with no apparent signs of impacts. A 1921 signal cable hut (building 946) near the airfield is currently partially buried and appears unaffected by dog activity. It is expected that with the prohibitions of dogs under voice control in many areas of the park, VSCAs would become more heavily used by visitors looking for areas to run dogs under voice and sight control. Over time, the actions proposed under alternative C at Crissy Airfield (VSCA) are expected to result in negligible to long-term, minor, site-specific, adverse impacts to cultural resources related to trampling and ground disturbance. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Cultural Landscapes

Forts Baker, Barry and Cronkhite Historic District. Cultural resources that contribute to the NRHP status of the Forts Baker, Barry, and Cronkhite Historic District and could be affected by dog management actions include earthwork portions of seacoast fortifications at Fort Baker and field fortifications (appendix I). Negligible to beneficial impacts to the earthwork portions of seacoast fortifications are expected; for Section 106, the assessment would be *no adverse effect* (see Historic Structures analysis above).

Field Fortifications. Under alternative C, dogs would be prohibited from all Marin Headlands trails in the area where the majority of the fragile field fortifications are located. Impacts to field fortifications under this alternative are similar to those described under alternative B: beneficial. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Under alternative C, only on-leash dog walking would be allowed on trails and the parade grounds at Fort Baker (away from earthwork portions of seacoast fortifications); dogs would be prohibited from areas in the Marin Headlands where field fortifications are located north of Fort Cronkhite (see Historic Structures analysis above). Collectively, these actions would result in reduced dog-related trampling and ground disturbance to these sensitive resources—a negligible to beneficial impact to the Forts Baker, Barry, and Cronkhite Historic District. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Presidio of San Francisco National Historic Landmark. Cultural resources located within the Presidio NHL that contribute to its significance and could be affected by dog management actions include field fortifications at Fort Scott, the U.S. Coast Guard Station Historic District, earthwork portions of seacoast fortifications, and Crissy Airfield (appendix I). Negligible impacts to earthwork portions of seacoast fortifications, and negligible to long-term, minor adverse impacts to Crissy Airfield are expected under

alternative C; for Section 106, the assessment would be *no adverse effect* (see Historic Structures analysis above).

Field Fortifications. These fragile resources are located primarily along a coastal area from Baker Beach north to the Golden Gate Bridge within Fort Scott. Under alternative C, dog walking on-leash would only be allowed along the beach, trails, picnic area and parking lots—a similar scenario to that described under alternative B. Impacts to field fortifications under alternative C would be similar to those described under alternative B: beneficial. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

U.S. Coast Guard Station Historic District. Under this alternative, on leash dog walking would be allowed only along the promenade (Crissy Field) on the southern border of the Historic District. Impacts to the District under alternative C would be similar to those described under alternative B: negligible. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

With the exception of adverse impacts expected at Crissy Airfield, alternative C would result in negligible to beneficial impacts for the analyzed cultural resources within the Presidio NHL. These impacts are primarily related to the minimizing of the potential for dog-related trampling and ground disturbance. Negligible to long-term, minor, adverse impacts expected at Crissy Airfield are related to its designation as a VSCA under this alternative. Collectively, these impacts would likely result in site-specific, localized negligible impacts for the Presidio NHL. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Fort Mason Historic District. Cultural resources that contribute to the NRHP status of the Fort Mason Historic District and could be affected by dog management actions include earthwork portions of seacoast fortifications (appendix I) (see Historic Structures analysis above). Under alternative C, on-leash dog walking would be allowed on sidewalks, paved trails and in parking areas, all of which are located away from sensitive earthwork portions of seacoast fortifications at Fort Mason. While VSCAs are proposed (Laguna Green, inner Great Meadow), none are located in areas where sensitive resources (seacoast fortification earthworks) occur. The restriction of dogs to areas at Fort Mason away from the sensitive earthwork portions of seacoast fortifications would minimize dog-related trampling and ground disturbance and result in negligible impacts to the historic district. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect.*

Fort Miley Military Reservation. Cultural resources located within the Fort Miley Military Reservation that contribute to its significance and could be affected by dog management actions include earthwork portions of seacoast fortifications (Batteries Chester, Livingston-Springer, BC #243) (appendix I). Under alternative C, on-leash dog walking is proposed along trails areas on the east side of the military reservation. A VSCA located within the Lands End site that runs along a trail to the north of the military reservation and away from batteries with sensitive fortification earthworks, is also proposed. The restriction of on-leash dog walking to trails and the location of the VSCA would result in a negligible impact to these sensitive earthwork portions of seacoast fortifications (see Historic Structure analysis above) and the larger Fort Miley Military Reservation. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Rancho Corral de Tierra. This site may be potentially eligible for listing on the NRHP for ties to the history of ranching operations dating back to the Mexican rancho era. This site includes landscape features, structures, and archeological sites, including the Francisco Guerrero Adobe Site, and the Martini Creek Ohlone sites (NPS 2011b, 105). The continued requirement of on-leash dog walking on all trails where dog walking is allowed, and a VSCA located far from ranching and archeological sites, would protect cultural resources at this site. The addition of a VSCA under alternative C in an area that does not

support sensitive cultural resources would result in a negligible impact to these resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Commercial Dog Walking

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a VSCA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Fort Mason, Fort Funston, Crissy Field, Fort Baker, and Baker Beach. Since commercial dog walking is not common at Fort Baker and Baker Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. The percentage of commercial dog walkers is considered low to moderate at Fort Mason and high at Fort Funston and Crissy Field; however, since dog walking would not be permitted near cultural resources, it is unlikely that commercial dog walking at these sites would create impacts to cultural resources. Overall, dogs walked by commercial dog walkers would create negligible impact to the park's cultural resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Permits would not be allocated at Muir Beach, Lands End, Fort Miley, Marin Headlands, and Fort Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at any of these sites it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on cultural resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Cumulative Impacts

Cumulative effects to cultural resources resulting from other park projects and actions are similar to those described under alternative A—benefits; negligible to possibly long-term, moderate adverse impacts. However, impacts to cultural resources under alternative C are not expected to contribute to these adverse cumulative impacts.

ALTERNATIVE C CONCLUSION TABLE

Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts to archeological resources; benefits and negligible to long-term, minor, site-specific, adverse impacts for historic structures; and negligible to beneficial impacts to cultural landscapes For purposes of Section 106 of the NHPA, the assessment for alternative C would be *no adverse effects* to cultural resources	Outcomes are related primarily to the reduction in dog activity (trampling, ground disturbance, erosion) in areas of sensitive cultural resources Site-specific adverse impacts to cultural resources ranging from negligible to minor are associated with the use of Crissy Airfield as a VSCA	Beneficial cumulative impacts related to preservation and enhancement efforts Negligible to long-term, moderate, adverse cumulative impacts related to ground disturbance (transportation, construction activities), impacts to views and vistas associated with cultural landscapes, and historic structure demolition	Beneficial to no change for archeological resources, historic structures, and cultural landscapes

ALTERNATIVE D: MOST PROTECTIVE OF RESOURCE PROTECTION AND VISITOR SAFETY

Archeological Resources

Muir Beach and Lands End. Under alternative D, dogs would be prohibited from the beach at Muir Beach and allowed on-leash only in the parking area and a trail that is not located in close proximity to the archeological site (CA-MRN-333). The two Point Lobos archeological sites (CA-SFR-5, CA-SFR-21) at Lands End are located in the general area that would allow only on-leash dog walking along trails and in parking lots. Impacts to archeological resources under this alternative are similar to those described for alternative B—negligible. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Historic Structures

Permanent Seacoast Fortifications and Their Integral Earthworks (Fort Mason, Fort Scott, Fort Baker, Fort Point, Fort Funston, Fort Miley). Under alternative D, on-leash dog walking is proposed in general areas of sensitive earthwork portions of seacoast fortifications located within the Fort Mason Historic District; the Forts Baker, Barry, and Cronkhite Historic District; the Presidio NHL; and at Fort Funston (Battery Davis) (appendix I). These on-leash areas include beaches, trails, some larger common areas, and picnic and parking areas. With the exception of Battery Davis at Fort Funston, these on-leash areas do not include direct access to specific sensitive earthwork portions of these fortifications. The existing trail that runs through Battery Davis (now under voice control management) would become an on-leash only trail under this alternative. Dogs would be prohibited at Fort Miley Military Reservation and Battery East Trail at Fort Point (Presidio NHL) where a number of sensitive earthwork portions of seacoast fortifications are located. Proposed VSCAs at Fort Mason Historic District and Fort Funston are located away from such resources. The dog prohibitions in certain areas, on-leash restrictions in others, and the locations of the VSCAs proposed under alternative D would provide enhanced protection to these fragile resources by reducing the potential for dog-related trampling and ground disturbance resulting in beneficial to negligible impacts to the park's historic structures. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Crissy Airfield. Under alternative D, a VSCA is proposed for the west half of the Crissy Airfield. Currently, dogs are allowed under voice and sight control on the airfield with no apparent signs of impacts to the airfield or nearby building 946 (signal cable hut). The actions proposed under alternative D are expected to result in impacts to cultural resources similar to those described under alternative C—negligible to long-term, minor, site-specific, adverse—due to its anticipated increased use by visitors with dogs. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Cultural Landscapes

Forts Baker, Barry, and Cronkhite Historic District. Cultural resources that contribute to the NRHP status of the Forts Baker, Barry, and Cronkhite Historic District and could be affected by dog management actions include field fortifications and earthwork portions of seacoast fortifications at Fort Baker (appendix I). Localized negligible to beneficial impacts to the earthwork portions of seacoast fortifications range are expected; for Section 106, the assessment would be *no adverse effect* (see Historic Structures analysis above).

Field Fortifications. Under alternative D, dogs would be prohibited from Marin Headlands trails that lead to the location of the fragile field fortifications north of Fort Cronkhite (Wolf Ridge area). Impacts under this alternative are similar to those described under alternative B—beneficial. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Under alternative D, on-leash dog walking would be allowed at Fort Baker on the Bay Trail (not including the Battery Yates Trail) and at the Lodge and Conference Center grounds, neither of which offers direct access to sensitive earthwork portions of seacoast fortifications (see Historic Structures analysis above). Dogs would be prohibited from the Marin Headlands area where sensitive field fortifications are located. For both areas, this would result in reduced potential for dog-related trampling and ground disturbance to sensitive resources— negligible to beneficial impacts to the Forts Baker, Barry, and Cronkhite Historic District. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Presidio of San Francisco National Historic Landmark. Cultural resources located within the Presidio NHL that contribute to its significance and could be affected by dog management actions include field fortifications at Fort Scott, the U.S. Coast Guard Station Historic District, earthwork portions of seacoast fortifications, and Crissy Airfield (appendix I). Negligible impacts to earthwork portions of seacoast fortifications and negligible to long-term, minor adverse impacts to Crissy Airfield are expected under alternative D; for Section 106, the assessment would be *no adverse effect* (see Historic Structures analysis above).

Field Fortifications. These fragile resources are located primarily along a coastal area from Baker Beach north to the Golden Gate Bridge within Fort Scott. Under alternative D, on leash dog walking would be allowed only along the trails that access the beach south of the north parking lot, picnic areas and parking lots. These on-leash areas do not include direct access to specific field fortifications though some trail alignments cross through sensitive areas. Restricting dogs to an on-leash presence in this area would minimize the potential for trampling and ground disturbance in areas on/around cultural resources resulting in a benefit to the park's cultural resources. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

U.S. Coast Guard Station Historic District. Under this alternative, on-leash dog walking would be allowed along the promenade on the southern border of the Historic District. Impacts to the District would be similar to those described under alternative B—negligible. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

With the exception of Crissy Field, negligible impacts or benefits are expected for all resources analyzed within the Presidio NHL under alternative D. Benefits would result from the requirements that dogs be on-leash in the general area of sensitive cultural resources thereby minimizing the potential for trampling and ground disturbance potential. Negligible to long-term, minor, adverse impacts at Crissy Field are related to the designation of the western portion of the airfield as a VSCA under this alternative. Collectively, these impacts would likely result in site-specific, localized negligible impacts for the Presidio NHL

Fort Mason Historic District: Cultural resources that contribute to the NRHP status of the Fort Mason Historic District and could be affected by dog management actions include earthwork portions of seacoast fortifications (appendix I) (see Historic Structures analysis above). Under alternative D, on-leash dog walking at Fort Mason would be allowed on sidewalks and in parking areas, all of which are located away from the sensitive earthwork portions of seacoast fortifications. While a VSCA is proposed on Laguna Green, it is not located where sensitive seacoast fortification earthworks occur. The restriction of dogs to areas at Fort Mason away from the sensitive earthwork portions of seacoast fortifications would minimize the potential for dog-related trampling and ground disturbance and result in negligible impacts to the Historic District. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect.*

Fort Miley Military Reservation. Cultural resources located within the Fort Miley Military Reservation that contribute to its significance and could be affected by dog management actions include earthwork

portions of seacoast fortifications (Batteries Chester, Livingston-Springer, BC #243) (appendix I). Under alternative D, dogs are prohibited from the Fort Miley Military Reservation. This prohibition would result in localized benefits for these sensitive earthwork portions of seacoast fortification (see Historic Structures analysis above), as well as localized benefits for the overall Historic District. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Rancho Corral de Tierra. This site may be potentially eligible for listing on the NRHP for ties to the history of ranching operations dating back to the Mexican rancho era. This site includes landscape features, structures, and archeological sites, including the Francisco Guerrero Adobe Site, and the Martini Creek Ohlone sites (NPS 2011b, 105). The continued requirement of on-leash dog walking on the two trails open to dogs under this alternative would result in a negligible impact to these resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Commercial Dog Walking

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on cultural resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Cumulative Impacts

Cumulative effects to cultural resources resulting from other park projects and actions are similar to those described under alternative A—benefits; negligible to possibly long-term, moderate adverse impacts. However, impacts to cultural resources under alternative D are not expected to contribute to these adverse cumulative impacts.

ALTERNATIVE D CONCLUSION TABLE

Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts to archeological resources; benefits, negligible to long-term, minor, site-specific, adverse impacts for historic structures; and negligible to beneficial impacts to cultural landscapes For purposes of Section 106 of the NHPA, the assessment for alternative D would be *no adverse effects* to cultural resources	Outcomes are related primarily to the reduction in dog activity (trampling, ground disturbance, erosion) in areas of sensitive cultural resources as well as the prohibition of dogs in areas containing sensitive resources Site-specific adverse impacts to cultural resources ranging from negligible to minor are associated with the use of Crissy Airfield as a VSCA	Beneficial cumulative impacts related to preservation and enhancement efforts Negligible to long-term, moderate, adverse cumulative impacts related to ground disturbance (transportation, construction activities), impacts to views and vistas associated with cultural landscapes, and historic structure demolition	Beneficial to no change for archeological resources, historic structures, and cultural landscapes

ALTERNATIVE E: MOST DOG WALKING ACCESS / MOST MANAGEMENT INTENSIVE

Archeological Resources

Muir Beach and Lands End. Under alternative E, dogs would be prohibited from the northern section of Muir Beach, would be allowed on-leash only in the parking area and connected trails and a VSCA would

be established on the section of beach south of the access path. Both of these areas are located away from the immediate vicinity of the archeological site (CA-MRN-333). The two Lands End Point Lobos archeological sites (CA-SFR-5, CA-SFR-21) are located in an area that would also allow only on-leash dog walking along trails and in parking lots. Impacts to archeological resources under this alternative are similar to those described for alternative B—negligible. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect.*

Historic Structures

Permanent Seacoast Fortifications and Their Integral Earthworks (Fort Mason, Fort Scott, Fort Baker, Fort Point, Fort Funston, Fort Miley). Under alternative E, on-leash dog walking is proposed in the general areas of sensitive earthwork portions of seacoast fortifications located within the Fort Mason Historic District; Forts Baker, Barry, and Cronkhite Historic District; the Presidio NHL; Fort Miley Military Reservation; and Fort Funston (appendix I). These areas include beaches, trails, some larger common areas, and picnic and parking areas. In addition, VSCAs are proposed at the Fort Miley Military Reservation/Lands End area, Fort Funston, the Presidio NHL (Fort Scott/Baker Beach area), and the Fort Mason Historic District. With the exception of Battery Davis (Fort Funston), these on-leash and VSCA areas do not include direct access to specific seacoast fortifications and their integral earthworks. The existing trail that runs through Battery Davis (now managed under voice control regulations) would allow only on-leash dog walking under this alternative. The on-leash regulations and the locations of the proposed VSCAs that do not allow direct access to cultural resources under alternative E would provide enhanced protection to these fragile resources by reducing the potential for dog-related trampling and ground disturbance resulting in a negligible to beneficial impact to the park's historic structures. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Crissy Airfield. Similar to alternative C, a VSCA is proposed for Crissy Airfield under this alternative. The actions proposed under alternative E are expected to result in impacts to cultural resources similar to those described under alternatives C and D—negligible to long-term, minor, site-specific, and adverse—due to its anticipated increased use by visitors with dogs. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Cultural Landscapes

Forts Baker, Barry, and Cronkhite Historic District. Cultural resources that contribute to the NRHP status of the Forts Baker, Barry, and Cronkhite Historic District and could be affected by dog management actions include field fortifications and earthwork portions of seacoast fortifications at Fort Baker (appendix I). Localized negligible to beneficial impacts to the earthwork portions of seacoast fortifications are expected; for Section 106, the assessment would be *no adverse effect* (see Historic Structures analysis above).

Field Fortifications. Under alternative E, dogs would be prohibited from Marin Headlands trails where fragile field fortifications are located north of Fort Cronkhite. Impacts under this alternative are similar to those described under alternative B—beneficial. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Under alternative E, on-leash dogs would not have direct access to sensitive earthwork portions of seacoast fortifications within the Forts Baker, Barry, and Cronkhite Historic District (see Historic Structures analysis above); dogs would be prohibited from the Marin Headlands area where sensitive field fortifications are located in the general Fort Cronkhite vicinity. This would result in reduced dog-related trampling and ground disturbance to sensitive resources—a localized benefit to the Forts Baker, Barry,

and Cronkhite Historic District. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Presidio of San Francisco National Historic Landmark. Cultural resources located within the Presidio NHL that contribute to its significance and could be affected by dog management actions include field fortifications at Fort Scott, the U.S. Coast Guard Station Historic District, earthwork portions of seacoast fortifications, and Crissy Airfield (appendix I). Localized negligible to beneficial impacts to earthwork portions of seacoast fortifications, and negligible to long-term minor, site-specific adverse impacts to Crissy Airfield are expected under alternative E; for Section 106, the assessment would be *no adverse effect* (see Historic Structures analysis above).

Field Fortifications. These fragile resources are located primarily along a coastal area from Baker Beach north to the Golden Gate Bridge within Fort Scott. Under alternative E, only on-leash dog walking would be allowed in areas where these resources are located (on the beach north of the north parking lot and along trails, in picnic area and in parking lots). These on-leash areas include trails that run adjacent to field fortifications but do not include direct access to them. Impacts to field fortifications under alternative E would be similar to those described under alternative B—beneficial. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

U.S. Coast Guard Station Historic District. Under this alternative, on-leash dog walking would be allowed from the promenade (Crissy Field) to the San Francisco Bay, an area that encompasses the entire structure. Current impacts of dog urination have negatively affected the perimeter hedge (vegetation loss), resulting in the need to replace vegetation, which helps to define the U.S. Coast Guard Station. Allowing on-leash dog walking into this area has the potential to result in negligible to possibly long-term minor, site-specific adverse impacts and will likely require the need for replanting of lost vegetation. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Under alternative E, negligible to beneficial impacts to the affected historic structures and field fortifications within the Presidio NHL are expected related to on-leash requirements along trails in the general area of sensitive resources. These requirements would minimize the potential for trampling and ground disturbance (see Historic Structures analysis above). Negligible to long-term minor, adverse impacts at Crissy Airfield are related to the designation of the airfield as a VSCA. Similar adverse impacts to the U.S. Coast Guard Station are related to the fact that on-leash dog walking would be allowed in and around the Historic District, increasing the potential for dog urination to negatively affect defining perimeter vegetation. Collectively, these impacts would result in negligible, site-specific, localized impacts for the Presidio NHL. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Fort Mason Historic District. Cultural resources that contribute to the NRHP status of the Fort Mason Historic District and could be affected by dog management actions include earthwork portions of seacoast fortifications (appendix I). Under alternative E, on-leash dog walking would be allowed on sidewalks and in parking areas, all of which are located away from sensitive earthwork portions of seacoast fortifications. As is true under alternative C, VSCAs are proposed (Laguna Green, Great Meadow) but do not provide direct access to sensitive seacoast fortification earthworks (see Historic Structures analysis, above). Impacts to the Fort Mason Historic District under this alternative would be similar to those described for alternative C—negligible; for Section 106, the assessment would be *no adverse effect*

Fort Miley Military Reservation. Cultural resources located within the Fort Miley Military Reservation that contribute to its significance and could be affected by dog management actions include earthwork portions of seacoast fortifications (Batteries Chester, Livingston-Springer, BC #243) (appendix I) (see Historic Structures analysis above). Under alternative E, on-leash dog walking is allowed on several trails

in/around Fort Miley Military Reservation. In addition, a VSCA is proposed along the eastern extent of Fort Miley in the general vicinity of Livingston-Springer Battery. The location of the VSCA does not include direct access to the seacoast fortification and its integral earthworks. The on-leash regulations and the fact that the proposed VSCA does not include access to sensitive cultural resources would provide enhanced protection to these fragile resources by reducing the potential for dog-related trampling and ground disturbance resulting in a negligible localized impact to the Fort Miley Military Reservation (see Historic Structures analysis above). For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Rancho Corral de Tierra. This site may be potentially eligible for listing on the NRHP for ties to the history of ranching operations dating back to the Mexican rancho era. This site includes landscape features, structures, and archeological sites, including the Francisco Guerrero Adobe Site, and the Martini Creek Ohlone sites (NPS 2011b, 105). The continued requirement that dogs must be on leash on all trails that allow dog walking, and with the proposed VSCA sited far from ranching and archeological sites, cultural resources would be protected at this site. The addition of a VSCA under alternative E in an area that does not support sensitive cultural resources would result in a negligible impact to these resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Commercial Dog Walking

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a VSCA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Fort Mason, Fort Funston, Crissy Field, Fort Baker, and Baker Beach. Since commercial dog walking is not common at Fort Baker and Baker Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. The percentage of commercial dog walkers is considered low to moderate at Fort Mason and high at Fort Funston and Crissy Field; however since dog walking would not be permitted near cultural resources, it is unlikely that commercial dog walking at these sites would create impacts to cultural resources. Overall, dogs walked by commercial dog walkers would create negligible impact to the park's cultural resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Permits would not be allocated at Muir Beach, Lands End, Fort Miley, Marin Headlands, and Fort Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at any of these sites it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on cultural resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Cumulative Impacts

Cumulative effects to cultural resources resulting from other park projects and actions are similar to those described under alternative A—benefits; negligible to possibly long-term, moderate adverse impacts. However, impacts to cultural resources under alternative E are not expected to contribute to these adverse cumulative impacts.

ALTERNATIVE E CONCLUSION TABLE

Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts to archeological resources Benefits, negligible to long-term, minor, site-specific, adverse impacts for historic structures and cultural landscapes For purposes of Section 106 of the NHPA, the assessment for alternative E would be *no adverse effects* to cultural resources	Outcomes are related primarily to the reduction in dog activity (trampling, ground disturbance, erosion) in areas of sensitive cultural resources as well as the prohibition of dogs in areas containing sensitive resources Site-specific adverse impacts to cultural resources ranging from negligible to minor are associated with the use of Crissy Airfield as a VSCA	Beneficial cumulative impacts related to preservation and enhancement efforts Negligible to long-term, moderate, adverse cumulative impacts related to ground disturbance (transportation, construction activities), impacts to views and vistas associated with cultural landscapes, and historic structure demolition	Beneficial to no change for archeological resources, historic structures, and cultural landscapes

ALTERNATIVE F: PREFERRED ALTERNATIVE

There are no identified cultural resources in the study areas that would be affected by the preferred alternative at Homestead Valley, Alta Trail/Orchard Fire Road/Pacheco Fire Road, Oakwood Valley, Rodeo Beach/South Rodeo Beach, and Sutro Heights.

Archeological Resources

Muir Beach and Lands End. Under the preferred alternative, only on-leash dog walking would be allowed on beaches and designated trails within the general areas where the Muir Beach (CA-MRN-333) and Lands End Point Lobos (CA-SFR-5; CA-SFR-21) archeological sites are located. As none of the three analyzed archeological sites is located within or close to these areas, they are not expected to incur any dog-related impacts. Additionally, these three archeological sites are considered relatively stable and their conditions are monitored periodically by park staff. Under this alternative, these on-leash requirements provide considerable protection from adverse dog-related activity to these cultural resources and result in a negligible impact to the park's archeological resources. The preferred alternative includes some landscaping elements, which would be constructed adjacent to existing trails to protect sensitive species. These are not located in the vicinity of the known sites. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Historic Structures

Permanent Seacoast Fortifications and Their Integral Earthworks (Fort Mason, Fort Point, Fort Miley, Fort Baker, Fort Funston). Under the preferred alternative, dog walking would be allowed near areas of sensitive earthwork portions of seacoast fortifications, including the Fort Mason Historic District and Fort Point (Presidio NHL) (see appendix I). However, Fort Point and the majority of Fort Mason would only allow on-leash dog walking under the preferred alternative. The Fort Mason Historic District contains some larger common areas (Great Meadow), trails, and parking lots. These on-leash areas do not include direct access to the earthwork portions of the seacoast fortifications. Under the preferred alternative, a VSCA is proposed at Fort Mason on the Laguna Green, but either fencing or a vegetative barrier would be installed at the VSCA. On-leash dog walking is also proposed in general areas where seacoast fortifications and their integral earthworks are located at Fort Miley Military Reservation, Fort

Baker (Forts Baker, Barry, and Cronkhite Historic District), and Fort Funston. The Fort Miley area includes some trails and picnic and parking areas but does not include direct access to the earthwork portions of seacoast fortifications. On-leash dog walking is proposed along trails and on the parade ground at Fort Baker, none of which offer direct access to seacoast fortifications in the area although one section of trail, the Battery Yates Trail portion of the Bay Trail, is adjacent to a battery. On-leash walking in the Fort Funston area is restricted to on-leash trails or VSCAs, all of which restrict access to cultural resources at Battery Davis. Fort Funston, which includes Battery Davis, was removed from the NRHP in 2006 due to resource degradation related to erosion and human use to the point where the site lacked integrity. However, Battery Davis was singled out for eventual inclusion in a National Historical Landmark District for seacoast fortifications of San Francisco Bay. The nomination is currently being prepared. The Battery Davis Trail is now closed to all visitors due to the erosion, which further protects Battery Davis. The proposals under the preferred alternative (on-leash, VSCAs located away from sensitive resources, fencing/barrier proposed at the Fort Mason VSCA, etc.) for Forts Mason, Point, Miley, Baker, and Funston would provide an added level of protection to these fragile resources by reducing the potential for dog-related trampling and ground disturbance. Under the preferred alternative, negligible to beneficial impacts to the park's historic structures would occur. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Crissy Airfield. A VSCA is proposed for the central portion of Crissy Airfield under the preferred alternative. This will require the construction of a new path across the airfield and some new landscaping elements. The details of these features have not yet been determined, but will be developed to fit within the historic nature of the airfield. Additional compliance may be needed for the proposed path and landscaping, depending on the selected design and would be completed prior to construction of these elements. Currently, dogs under voice control are allowed at Crissy Airfield with no apparent signs of impacts. A 1921 signal cable hut (building 946) near the airfield is currently partially buried and fenced off and appears unaffected by dog activity. It is expected that with the prohibitions of dogs under voice control in many areas of the park, VSCAs (including at Crissy Field) would become more heavily used by visitors looking for areas to run dogs under voice and sight control. Over time, the actions proposed under the preferred alternative at Crissy Airfield (VSCA) are expected to result in negligible to long-term, minor, site-specific, adverse impacts to cultural resources related to trampling and ground disturbance. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Cultural Landscapes

Fort Mason Historic District. Cultural resources located within the Fort Mason Historic District that contribute to its significance and could be affected by dog management actions include earthwork portions of seacoast fortifications (Burnham, Black Point—see Historic Structures analysis above) (appendix I). Under the preferred alternative, only on-leash dog walking would be allowed in parking and common areas (sidewalks, Great Meadow, etc.). A VSCA is proposed at Fort Mason on the Laguna Green, but either fencing or a vegetative barrier would be installed. The restriction of on-leash dog walking at Fort Mason and the fencing/barrier proposed at the VSCA would minimize the potential for dog-related trampling and ground disturbance to these cultural resources and would result in a negligible impact to the Historic District. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Forts Baker, Barry and Cronkhite Historic District. Cultural resources that contribute to the NRHP status of the Forts Baker, Barry, and Cronkhite Historic District and which could be affected by dog management actions include earthwork portions of seacoast fortifications (as described above) at Fort Baker and field fortifications (appendix I). Negligible to beneficial impacts to the earthwork portions of seacoast fortifications are expected; for Section 106, the assessment would be *no adverse effect* (see Historic Structures analysis above).

Field Fortifications. Under the preferred alternative, dogs would be prohibited from all Marin Headlands trails in the area where the majority of the fragile field fortifications are located. Eliminating dog activity from this area is considered a positive step in the preservation of these resources related to the decreased potential for ground disturbance resulting in a localized benefit to the park's cultural resources. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*. Under the preferred alternative, on-leash dog walking would be allowed at Fort Baker on-trail and on the parade ground (away from the earthwork portions of seacoast fortifications) (see Historic Structures analysis above); dogs would be prohibited from the areas of the Marin Headlands where fragile field fortifications are located. Collectively this would prevent dog-related trampling and ground disturbance to these fragile resources resulting in negligible to beneficial impacts to the Forts Baker, Barry, and Cronkhite Historic District. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Presidio of San Francisco NHL. The NRHP status of the Presidio NHL is related to its numerous contributing historic, architectural and archeological resources associated with important events in American history. Contributing cultural resources located within the Presidio NHL that would be affected by the plan include field fortifications (Fort Scott), the U.S. Coast Guard Station Historic District, earthwork portions of seacoast fortifications, and Crissy Airfield. Negligible to beneficial impacts to earthwork portions of seacoast fortifications, and negligible to long-term, minor adverse impacts to Crissy Airfield are expected under the preferred alternative; for Section 106, the assessment would be *no adverse effect* (see Historic Structures analysis above).

Field Fortifications. These fragile resources are located primarily along a coastal area from Baker Beach north to the Golden Gate Bridge within Fort Scott. Under the preferred alternative, dog walking on-leash would only be allowed along the south portion of the beach, many trails, and the picnic area and parking lots at Baker Beach; dogs would be prohibited on the Batteries to Bluffs and Battery Crosby Trails. This area is one of high cultural sensitivity with numerous field fortifications present, particularly in the vicinity of Batteries Chamberlin, Crosby and Godfrey (Martini n.d.a.). The field fortifications have been constructed in sandy/unstable soils and are considered fragile. As a result, ground disturbance can result in erosion and negative impacts to these resources. Restricting dogs to on-leash walking near Battery Chamberlin and prohibiting dogs on the Batteries to Bluffs and Battery Crosby trails would minimize the potential for trampling and ground disturbance in areas on/around cultural resources resulting in a benefit to the park's cultural resources. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

U.S. Coast Guard Station Historic District. Under this alternative, on leash dog walking would be allowed along the promenade (Crissy Field) on the southern border of the Historic District and on the lawns and paved public road adjacent to the old Coast Guard buildings. Vegetation that helps to define the original formal design and the edges of the property has been negatively affected in the past by dogs (urination killing vegetation), many of which are dogs under voice control. On-leash requirements under the preferred alternative are expected to result in a negligible impact to the historic district. For purposes of Section 106 of the NHPA, the assessment would be *no adverse effect*.

Fort Miley Military Reservation. Cultural resources located within the Fort Miley Military Reservation that contribute to its significance and could be affected by dog management actions include earthwork portions of seacoast fortifications (Batteries Chester, Livingston-Springer, BC #243) (appendix I). Under the preferred alternative, on-leash dog walking is proposed only along a trail on the east side of the military reservation. The overall impacts to the larger Fort Miley Military Reservation would be negligible. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Rancho Corral de Tierra. This site may be potentially eligible for listing on the NRHP for ties to the history of ranching operations dating back to the Mexican rancho era. This site includes landscape

features, structures, and archeological sites, including the Francisco Guerrero Adobe Site, and the Martini Creek Ohlone sites (NPS 2011b, 105). The continued requirement of on-leash dog walking to trails would result in a negligible impact to these resources. The preferred alternative would also establish a VSCA at Flat Top; however, the area is a former quarry site and would not impact these resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Commercial Dog Walking

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, would be able to obtain a permit to walk more than three dogs, with a limit of six dogs. Permit holders would be required to have all dogs on leash in on-leash areas. In a VSCA, permit holders may have up to six dogs off-leash. The permit may restrict use by time and area. Permits would be issued for seven park sites, including Alta Trail, Rodeo Beach, Fort Funston, Crissy Field, Baker Beach, Fort Mason and Fort Baker. Since commercial dog walking activity is now common at most of these sites, except for Fort Mason, it is likely that this alternative would not have an impact on the number of dog walkers. The percentage of commercial dog walkers is considered low to moderate at Fort Mason; however, since dog walking would not be permitted near cultural resources, it is unlikely that commercial dog walking at these sites would create impacts to cultural resources. The percentage of commercial dog walkers is considered high at Fort Funston and Crissy Field. At Fort Funston, a VSCA is located adjacent to Battery Davis but does not extend through or over it. At Crissy Field dog walking would not be permitted near cultural resources. It is unlikely that commercial dog walking at these sites would create impacts to cultural resources. Permits would not be issued for Fort Miley or the Marin Headlands Trails sites; in those areas, individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person, and would be required to follow the dog walking restrictions at those sites. Since commercial dog walking is not common at Lands End and Fort Point, and commercial dog walkers in those areas would be limited to three dogs, it is likely that the new regulation would not have an impact on the number of dog walkers. Overall, dogs walked by commercial dog walkers would create negligible impact to the park's cultural resources. For purposes of Section 106 of NHPA, the assessment would be *no adverse effect*.

Cumulative Impacts

Cumulative effects to cultural resources resulting from other park projects and actions would be both beneficial, and negligible to possibly long-term, moderate adverse impacts. However, impacts to cultural resources under the preferred alternative are not expected to contribute to these adverse cumulative impacts.

Archeological/Ethnographic Resources

The Big Lagoon wetland and creek restoration project in Marin County includes a cultural resource goal "to incorporate cultural heritage values and sites of the Coast Miwok into the restoration design, visitor experience, and long term management of the project area" (NPS 2007b, 2-12). It is the park's intent to integrate elements of the cultural ecology of the Coast Miwok into the design, management and interpretation of the restoration project. This will be accomplished through consultation with the Federated Indians of Graton Rancheria regarding archeological, ethnographic and ethnohistoric data. The analysis and interpretation of the cultural ecology of some of the prior inhabitants of the area would likely result in a cumulative benefit for the park's cultural resources.

Historic Structures

Permanent Seacoast Fortifications and Their Integral Earthworks. A number of seacoast fortifications located along the coastline of GGNRA have undergone extensive study over the past 20 years (see chapter 3 for more detail). While some of these resources, particularly earlier ones, have been lost to natural erosion or later redevelopment, the great majority still exist under park protection. The park currently manages numerous remaining structures, most of which are "well-preserved examples of nearly every important development in military fortification engineering from before the Civil War to the guided missile era" (Freeman et al. 1999, 1). Many of these structures have been determined eligible for the NRHP and often contribute to the significance of larger Historic Districts or NHLs that could be affected by this final plan/EIS (Fort Miley; Fort Mason; Forts Baker, Barry, and Cronkhite; the Presidio). The entire seacoast fortification network at GGNRA is currently being nominated as a NHL and is being managed as such until official determination is complete (Freeman et al. 1999, 2). Such management offers protection of these fragile and important resources and provides localized benefits to Historic Structures within the park.

Cultural Landscapes

Forts Baker, Barry, and Cronkhite Historic District. These former military bases/forts were transferred from other federal ownership to GGNRA, the most recent being Fort Baker in 2002. As the NPS is mandated to preserve and protect these historic resources, GGNRA employs a variety of options to accomplish this such as adaptive use of historic buildings and grounds by park partners. Partnering with other groups provides continued life and maintenance of the structures and landscapes. In addition, a variety of guidance documents (e.g., cultural landscape reports, cultural landscape inventories) focused on these significant historic cultural resources have been completed. These documents consolidate existing research, evaluate cultural landscape elements, and provide recommendations for future maintenance and use of the properties. These studies specifically address elements of the Historic District including Fort Baker (NPS 2005d), Fort Barry (NPS n.d.g), and Fort Cronkhite (NPS 2008e) (see chapter 3). These studies guide the continued and appropriate use of these historic resources and result in a cumulative benefit to the cultural resources of the Forts Baker, Barry, and Cronkhite Historic District.

In addition, rehabilitation/reuse of historic army buildings within the Forts Baker, Barry, and Cronkhite Historic District has or could result in benefits to the District resources. For instance, the Fort Baker Plan (NPS 2008h) preferred alternative includes rehabilitation of numerous historic structures for a conference center and landscape improvements such as restoration of the historic Fort Baker parade grounds. The Headlands Institute Improvement and Expansion Plan (NPS 2009b) would rehabilitate some historic structures and possibly construct new ones within Fort Cronkhite for a field science education program. While the majority of cumulative impacts to the District related to these actions are expected to be beneficial as related to restoration, rehabilitation and preservation of historic fort elements, several actions (e.g., construction-related ground disturbance, introduction of visually intrusive elements) have or could result in negligible to possibly long-term minor cumulative adverse impacts for some district resources.

Adverse impacts to the Forts Baker, Barry, and Cronkhite Historic District related to transportation projects that occurred both before and after those sites transferred to the NPS; similar impacts are likely to occur to some degree in the future. For example, the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan EIS* (NPS 2009c) has had a variety of adverse impacts to the District's cultural resources related to modifications to a number of sensitive, character-defining features of historic roadways within the Marin Headlands. In general, transportation projects have and are likely to result in long-term minor to possibly moderate cumulative adverse impacts to the Forts Baker, Barry, and Cronkhite Historic District resources.

Recent improvements to the Marine Mammal Center located just northeast of Fort Cronkhite in the Forts Baker, Barry, and Cronkhite Historic District have resulted in long-term minor cumulative adverse impacts to the District, primarily related to modifications of the landscape's viewshed.

Battery Cavallo Preservation and Interpretation Plan. Battery Cavallo is located within Fort Baker and dates to the early 1870s. Increased visitation to Fort Baker, particularly East Fort Baker, in the 1970s and 1980s resulted in uses of the battery area in ways that had the potential to impact the structure's integrity. In recent years, access to the battery has been restricted, enhancing preservation of the resource (Martini, n.d.c.). Battery Cavallo was part of the nomination prepared for Forts Baker, Barry and Cronkhite historic district and is considered a contributing resource. A preservation plan for Battery Cavallo is currently in the draft stage and has the potential to provide cumulative benefits to Battery Cavallo through enhanced preservation actions.

Presidio NHL. The U.S. Coast Guard Station Historic District, located within the larger Presidio NHL, has benefitted from the transfer to park ownership/management. These benefits derive primarily from the fact that the park is actively involved with the continued life and maintenance of the structures and landscapes within the Presidio, as well as the park's provision of guidance documents, such as cultural landscape reports, for the NHL's appropriate management (e.g., NPS 2006f). These efforts result in cumulative benefits for the Presidio NHL.

Adverse impacts to the resources of the Presidio NHL related to transportation projects have occurred in the past and similar impacts are likely to continue to occur to some degree into the future. As an example, construction of the Golden Gate Bridge in the 1930s resulted in "drastic changes to much of Fort Winfield Scott and other parts of the Presidio" including partial demolition of portions of Batteries Lancaster and East (Martini n.d.a, 36; Freeman et al. 1999). In general, transportation projects have and are likely to result in long-term minor to possibly moderate cumulative adverse impacts to the Presidio NHL resources.

Future plans for trail realignment projects along Baker Beach and the bluffs north of it (Coastal Trail, Batteries to Bluff Trail) have the potential to affect the cultural resources of the Presidio NHL in the future. In particular, there are a number of fragile field fortifications (machine gun pits, encampments, etc.) located immediately adjacent to many of the WW II batteries in this area (e.g., Chamberlin, Crosby, Godfrey)(Martini n.d.a). These resources are located in unstable sandy soils and are vulnerable to erosion. The details of the specific trail realignment activities are unknown at this time but it is anticipated that trail design will, under the NHPA assessment, result in *no adverse effects* to these resources.

Fort Mason Historic District. Ownership and management of this District is addressed in the Fort Mason Historic District Cultural Landscape Inventory (NPS 2004a). The management of Fort Mason Historic District is similar to that of the Forts Baker, Barry, and Cronkhite Historic District and Presidio NHL. As the NPS is mandated to preserve and protect these historic resources, GGNRA employs a variety of options to accomplish this such as adaptive use by park partners. Partnering with other groups for the use of such structures provides continued life and maintenance of the structures and landscapes. In addition, a variety of guidance documents (e.g., cultural landscape reports, cultural landscape inventories) focused on these significant historic cultural resources have been completed. These documents consolidate existing research, evaluate cultural landscape elements, and provide recommendations for future maintenance and use of the properties. Such efforts further the continued and appropriate use of these historic resources and result in a cumulative benefit to the cultural resources of the Fort Mason.

Fort Miley Military Reservation. Fort Miley dates to the 1890s and, historically, consisted of three distinct complexes of structures—western, central and eastern segments (see chapter 3). The central portion of the Fort was demolished in 1934 to make way for construction of a VA hospital. As a result,

this portion of Fort Miley no longer possesses integrity and is excluded from the existing Historic District boundaries. It is not managed by GGNRA but by the VA. While the loss of the integrity of the central portion of Fort Miley in the 1930s can be considered a moderate adverse impact to the military reservation, this occurred decades before its listing on the NRHP, and current management of remaining seacoast fortifications on the east and west sides of the fort can be considered a cumulative benefit to cultural landscapes of the park (see Historic Structures, above).

Overall, cumulative impacts of other park projects and actions to cultural resources include benefits primarily related to preservation and enhancement efforts. The proposed GGNRA interim compendium amendment would require commercial dog walkers in San Francisco and Marin counties to obtain a permit to walk more than three dogs at GGNRA sites, and would be limited to no more than six dogs. This would have beneficial impacts on cultural resources in the park. Cumulative adverse impacts from other park projects and actions range from negligible to possibly moderate and are related to ground disturbance (transportation, construction activities), impacts to views and vistas associated with cultural landscapes, and historic structure demolition. However, impacts to cultural resources under the preferred alternative are not expected to contribute to these adverse cumulative impacts.

PREFERRED ALTERNATIVE F CONCLUSION TABLE

Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts to archeological resources; negligible to beneficial impacts, negligible to long-term, minor, site-specific, adverse impacts to historic structures; negligible to beneficial localized impacts to cultural landscapes For purposes of Section 106 of the NHPA, the assessment for alternative F would be *no adverse effects* to cultural resources	Outcomes are related primarily to the reduction in dog activity (trampling, ground disturbance, erosion) in areas of sensitive cultural resources Site-specific adverse impacts to cultural resources ranging from negligible to minor are associated with the use of Crissy Airfield as a VSCA	Beneficial cumulative impacts related to preservation and enhancement efforts Negligible to long-term, moderate, adverse cumulative impacts related to ground disturbance (transportation, construction activities), impacts to views and vistas associated with cultural landscapes, and historic structure demolition	Beneficial to no change for archeological resources, historic structures, and cultural landscapes