

U.S. DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

RECORD OF DECISION

**OFF-ROAD VEHICLE MANAGEMENT PLAN / FINAL
ENVIRONMENTAL IMPACT STATEMENT**

GLEN CANYON NATIONAL RECREATION AREA

Arizona and Utah

The Department of the Interior, National Park Service (NPS), has prepared this Record of Decision (ROD) on the final Glen Canyon National Recreation Area (Glen Canyon) Off-Road Vehicle Management Plan/Environmental Impact Statement (plan/EIS). This ROD has been prepared in accordance with the requirements of the National Environmental Policy Act of 1969, as amended (NEPA), its implementing regulations (40 CFR 1500–1508), the Department of the Interior's NEPA regulations (43 CFR 46), and NPS Director's Order 12: Conservation Planning, Environmental Impact Analysis and Decision-making and accompanying handbook. This ROD includes a summary of the purpose and need for action, synopses of alternatives considered and analyzed in detail, a description of the selected alternative, summary of consultation, the basis for the decision, and a description of the environmentally preferable alternative. Citations can be found in the Reference section of the final plan/EIS.

BACKGROUND

Glen Canyon encompasses 1,254,306 acres in northern Arizona and southeastern Utah and includes portions of Garfield, Kane, San Juan, and Wayne Counties in Utah and Coconino County in Arizona. Glen Canyon encompasses Rainbow Bridge National Monument and shares boundaries with other national park system units, including Grand Canyon National Park, Capitol Reef National Park, and Canyonlands National Park. The southern boundary of Glen Canyon runs contiguous to the lands of the Navajo Nation and Glen Canyon adjoins approximately 9.3 million acres of federal lands administered by the Bureau of Land Management (BLM), including the Grand Staircase Escalante National Monument, Vermilion Cliffs National Monument, and the Paria Canyon-Vermilion Cliffs Wilderness.

The use of motorized vehicles to reach off-road destinations in Glen Canyon predates the establishment of the recreation area in 1972 (PL 92-593). After Lake Powell began to fill behind the completed Glen Canyon Dam in 1963, the public began driving off-road to access the new lake for recreational activities. This off-road use continued following the establishment of the national recreation area in 1972.

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A comprehensive planning process begun by NPS after the establishment of Glen Canyon resulted in the publishing of a general management plan (GMP) in 1979. The GMP designated a system of open roads for vehicle travel and closed several existing unpaved roads in the backcountry. After an evaluation of several alternatives for wilderness suitability under the 1964 Wilderness Act, NPS published a Wilderness Recommendation in 1980 proposing 588,855 acres for designation as wilderness within Glen Canyon.

Following a rapid increase in visitation to Glen Canyon during the 1970s, NPS determined that site-specific planning for off-road use was warranted. Increasing use at shoreline locations was leading to management concerns, including visitor conflicts, safety issues, resource degradation, and unsystematic off-road use. In response, NPS developed a management plan for Lone Rock Beach (1981 *Lone Rock Beach Development Concept Plan and Environmental Assessment*) as well as a management plan for 20 accessible shoreline areas on Lake Powell (1988 *Environmental Assessment and Management / Development Concept Plans for Lake Powell's Accessible Shorelines*). Twelve of the 20 accessible shoreline sites were developed to provide for off-road driving.

In 1986 the *Paiute Farms/San Juan Marina Development Concept Plan Environmental Assessment* (NPS 1986) evaluated the development of a marina that was subsequently constructed and then destroyed by a flash flood several years later. Off-road use at this former marina site continues in order to access the San Juan Arm of Lake Powell at this location. In addition, the 2006 Uplake Development Concept Plan (NPS 2006b) designated an area at the Hite Boat Ramp to continue its use for primitive shoreline camping, which is accessed by off-road use between the public boat launch ramp and the former Hite marina site. An additional area bordering the Navajo Nation, Nokai Canyon, is not authorized for off-road use but is currently being accessed and has not been addressed in past planning efforts.

In 2005, NPS was challenged by Friends of the Earth, the National Parks Conservation Association, and Wildlands CPR (known collectively as Bluewater Network) in federal court over failure to comply with Executive Orders 11644 and 11989 and 36 CFR 4.10(b), which provide, among other things, that NPS must promulgate a special regulation before authorizing off-road vehicle use (see *Friends of the Earth, Bluewater Network Division, et al. v. United States Department of the Interior, et al.*, Case 1:05-cv-02302-RCL). Although NPS had implemented off-road vehicle (ORV) management plans for various parts of Glen Canyon in 1981 (Lone Rock Beach) and 1988 (20 accessible shoreline areas on Lake Powell), Glen Canyon did not promulgate a special regulation to designate off-road use areas. The litigation was resolved under a settlement agreement, dated May 12, 2008, which requires Glen Canyon to prepare an ORV plan and promulgate a regulation if off-road use is allowed. Glen Canyon prepared this plan/FEIS and Record of Decision under the terms of the settlement agreement.

The plan/FEIS addresses the future management of accessible shoreline areas and their suitability for use by conventional motor vehicles, as well as by non-conventional vehicles, such as off-highway vehicles (OHVs) and street-legal all-terrain vehicles (ATVs). The plan/FEIS also evaluates the designation of ORV routes in other areas of Glen Canyon such as at Ferry Swale

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near Page, Arizona. Lastly, the plan/FEIS evaluates the use of OHVs and street-legal ATVs on GMP roads in Glen Canyon.

PURPOSE OF THIS PLAN/FEIS

The purpose of the plan/FEIS is to evaluate off-road use by conventional and non-conventional motor vehicles and on-road use by non-conventional motor vehicles and develop management actions that preserve Glen Canyon's scientific, scenic, and historic features; provide for the recreational use and enjoyment of the area; and promote the resources and values for which the area was established as a unit of the national park system.

NEED FOR ACTION

A plan/FEIS is needed for the following reasons:

- To evaluate the impacts associated with off-road use in Glen Canyon and determine what management actions should be taken.
- To determine whether NPS will authorize off-road use in accordance with Executive Orders 11644 and 11989 (off-road vehicles on public lands), NPS laws, regulations (36 CFR 4.10), and policies to minimize impacts to Glen Canyon.
- To evaluate the impacts resulting from on-road use by non-conventional motor vehicles in Glen Canyon, and determine what management actions should be taken.
- To address changes in vehicular access at visitor use areas due to fluctuating lake levels.

TERMINOLOGY

Vehicle technology is changing rapidly. State codes, likewise, can alter the definition of a vehicle. As such, NPS desires to maintain flexibility in its approach to managing vehicle types so that management can remain responsive to future changes in recreation technologies, State codes, production standards, and other factors beyond the control of the plan/FEIS. The following definitions explain the terms commonly used throughout the plan/FEIS.

Park Road: NPS defines a park road as the main-traveled surface of a roadway open to motor vehicles, owned, controlled or otherwise administered by NPS. See 36 CFR 1.4; *see also* Park Road Standards (NPS 1984).

General Management Plan (GMP) Road: Roads (paved and unpaved) open to motor vehicle travel as designated in the Glen Canyon 1979 General Management Plan (NPS 1979). All other roads are closed to public motor vehicle travel. GMP roads in Glen Canyon are the same as park roads.

Off-road Use: The term "off-road use" or "off-road travel" refers to the driving of any motor vehicle off of paved or unpaved roads. Operating a motor vehicle off of any GMP roads or outside any parking area within the National Park System is illegal unless it is authorized by a special regulation.

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Motor Vehicle: NPS defines a motor vehicle as “every vehicle that is self-propelled and every vehicle that is propelled by electric power, but not operated on rails or upon water, except a snowmobile and a motorized wheelchair.” *See* 36 CFR 1.4.

Off-road Vehicle (ORV): NPS defines ORVs broadly as “any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain.” *See* Executive Order 11644.

Conventional Motor Vehicle: The term “conventional motor vehicle” is used in the plan/FEIS to refer to motor vehicles designed primarily for use and operation on streets and highways and licensed and registered for interstate travel, which may also be used off-road. They are distinguished from non-conventional vehicles (see next definition). Examples of conventional motor vehicles include, but are not limited to automobiles, vans, highway motorcycles (including dual-sports motorcycles licensed for use on a highway), sport utility vehicles, recreational vehicles (RVs), pickup trucks, or buses for which the primary purpose of manufacture is transportation and/or commerce. Conventional motor vehicles do not include OHVs, ATVs, or snowmobiles.

Non-conventional Motor Vehicle: The term “non-conventional motor vehicle” is used throughout the plan/FEIS to refer to vehicles primarily designed for off-road use. Examples of non-conventional motor vehicles include, but are not limited to, ATVs, OHVs, dirt bikes, sand rails, side-by-sides, and dune buggies. When necessary to distinguish a road or area designated for a specific category of motor vehicles, non-conventional motor vehicles are further divided into two categories: (1) OHVs and (2) street-legal ATVs. Snowmobiles are not included in this term.

Off-highway Vehicle (OHV): NPS does not have a definition for OHV in its regulations. When used in this plan/FEIS, the term “OHV” includes all vehicles described in the applicable state statute with the exception of snowmobiles, ground effects and air cushion vehicles (i.e. “hovercraft”), street-legal motorcycles, and street-legal ATVs. Glen Canyon is within two states (Arizona and Utah) with distinct vehicle codes that define OHV operator and vehicle requirements

Street-legal All-terrain Vehicle (ATV): NPS does not have a definition for ATV in the federal code. Glen Canyon overlaps two state jurisdictions (Arizona and Utah) with distinct vehicle codes.

In Utah, ATVs are legal to operate on a road or highway, with the exception of an interstate freeway¹ or a limited access highway, if they meet the “street-legal” definition under the Utah state motor vehicle and traffic code, currently described at U.C.A. § 41-6a-1509, “Street-legal all-terrain vehicle — Operation on highways — Registration and licensing requirements — Equipment requirements.”

¹ Freeways are controlled-access highways that are part of the U.S. Interstate system as provided in the Federal Aid Highway Act of 1956 (Public Law 84-627) and any supplemental acts or amendments.

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Arizona does not separately define street-legal ATVs, but it defines ATVs and allows use of some OHVs on highways. ATVs are defined at A.R.S. § 28-101(3). OHVs, which may include ATVs, are legal to operate on a road or highway if they comply with the same equipment requirements as other vehicles operated on highways. If such an OHV will be operated primarily off-highway, it may also be registered for highway use with no additional fee (A.R.S. § 28-1177(C)). A street-legal ATV in Arizona thus refers to an OHV that fits both the definition of an ATV and complies with the equipment requirements for operation on a highway.

Off-road Vehicle (ORV) Area The plan/FEIS uses the term “ORV area” to refer to an area designated for off-road motor vehicle use under 36 CFR 4.10.

Off-road Vehicle (ORV) Route: The plan/FEIS uses the term “ORV route” to refer to a route designated for off-road motor vehicle use under 36 CFR 4.10.

ALTERNATIVES CONSIDERED

The alternatives analyzed in the plan/FEIS are the result of internal and public scoping. NPS held seven meetings to inform the public about the preliminary alternatives for the plan/FEIS. These alternatives meet the management objectives of the recreation area while also meeting the overall purpose of and need for the proposed action. Alternative elements that were considered but were not technically or economically feasible; did not meet the purpose and need for the project; created unnecessary or excessive adverse impacts on resources; and/or conflicted with the overall management of Glen Canyon or its resources were dismissed from further analysis.

ALTERNATIVE A: NO ACTION

The no-action alternative represents the continuation of existing management policies and actions related to the use of ORVs in Glen Canyon and represents no change from the current level of management direction and level of management intensity. This alternative is consistent with the 1979 Glen Canyon GMP and other planning documents and management policies related to off-road use in Glen Canyon. If the no-action alternative were selected, NPS would be required to promulgate a special regulation to authorize existing ORV routes and areas in compliance with 36 CFR 4.10.

ALTERNATIVE B: NO OFF-ROAD USE

Under alternative B, the remote, undeveloped, and lightly traveled nature that characterizes much of Glen Canyon would be maintained by limiting the operation of motor vehicles only to designated roads. Nearly 669,000 acres of Glen Canyon are classified as “Natural” under Glen Canyon’s management zones, where maintaining isolation and natural processes is the primary management objective. There would be no designated ORV routes or areas and existing off-road use areas would be closed and restored to natural conditions.

ALTERNATIVE C: INCREASED MOTORIZED ACCESS

Under alternative C, ORVs would be managed in a manner that would expand the recreational opportunities in Glen Canyon by increasing the number of ORV routes and areas. Alternative C

is designed to enhance the visitor experience by identifying and designating specific areas capable of supporting off-road use and on-road OHV and street-legal ATV use, while prohibiting such uses in areas where natural and cultural resources and visitor experience may be adversely impacted.

ALTERNATIVE D: DECREASED MOTORIZED ACCESS

The isolated and primitive characteristics of the Glen Canyon backcountry would be enhanced by limiting areas open to off-road use and by prohibiting the operation of OHVs and street-legal ATVs throughout Glen Canyon. These actions are intended to enhance the protection of Glen Canyon resources and values, as well as to promote recreation opportunities that are based on a sense of solitude, remoteness, and natural conditions. Alternative D would reduce the number of available ORV areas and routes.

ALTERNATIVE E: MIXED USE (NPS PREFERRED ALTERNATIVE AND SELECTED ALTERNATIVE)

Alternative E is designed to protect resources and enhance the visitor experience by identifying and designating specific areas capable of supporting off-road use while prohibiting such uses in areas where resources and values may be at risk.

SELECTED ALTERNATIVE

The NPS will implement Alternative E: Mixed Use. The details of the selected alternative are discussed below.

The following management actions are included in the selected alternative but were also common to all alternatives, including the no-action alternative. Additional details of each management action may be found in the plan/FEIS.

- **Clarification of the Management of Glen Canyon Lands below Lake Powell Full Pool:** The Lake Powell shoreline area below full pool (3,700-foot elevation contour) is not open to off-road use by any motor vehicle unless designated for off-road use. Designated ORV routes and areas will be clearly marked using fences, barriers, signs, flagging, and other visitor use management techniques.
- **Conventional Motor Vehicle Operator Requirements:** All conventional motor vehicle use must comply with applicable NPS and state statutes and regulations regarding conventional motor vehicle use.
- **Use Area Rules:** All rules applicable to public use, recreation, and travel at Glen Canyon will remain in effect.
- **Administrative Uses and Other Authorized Uses:** Administrative uses will continue, including use by government officials, lease holders, permit holders, or any other individual with authority from NPS to operate at Glen Canyon.

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- **NPS Authority to Alter or Adopt State Motor Vehicle Laws:** NPS will review any future change to state law that may affect motor vehicle operation and use in Glen Canyon for conformity with the plan/FEIS. Unless NPS provides otherwise, under 36 CFR 4.2, NPS adopts non-conflicting state laws.

The following management actions are included in the selected alternative. These actions were also common to all action alternatives. Additional details of each management action may be found in the plan/FEIS.

- **Designation of Roads Open to OHV and Street-Legal ATV Use:** GMP roads that are identified as either open or closed to OHV and street-legal ATV use will be adequately marked.
- **Communications Strategy:** The multiple government jurisdictions, the transboundary nature of roads, and the lack of active management from NPS has resulted in confusion about which regulations apply throughout Glen Canyon. To address this confusion, a communications strategy will be developed that would include partnerships, online based applications, informational brochures, and media.
- **Motor Vehicle Operator and Equipment Requirements:** All motor vehicle use must comply with state motor vehicle and operator requirements. Operators of conventional and non-conventional motor vehicles are responsible for complying with all applicable NPS and state statutes and regulations pertaining to the lawful operation of motor vehicles in Glen Canyon. In addition, the NPS will establish a new sound limit prohibiting operation of a motor vehicle that emits more than 96 decibels of sound.
- **Closing Undesignated ORV Routes and Areas and Restoring Them to Natural Conditions:** NPS will close routes and areas not designated for off-road use. NPS may use a number of different techniques to close and restore routes and areas where unauthorized off-road use has previously occurred.

Measures to Monitor, Avoid, Minimize, or Mitigate Off-Road Motor Vehicle Impacts

NPS developed strategies to minimize the impacts from off-road use as proposed in the plan/FEIS. The objectives are to improve site design and control, reduce incidents of disturbance to lands, restore disturbed areas, track findings and accomplishments, and increase public awareness of the environmental impacts related to off-road use. These are listed in Attachment B.

Mitigation

Most mitigation measures were developed and incorporated to avoid impacts to park resources or to minimize the extent of the impacts by limiting the degree or magnitude of the proposed motor vehicle uses. The majority of these mitigation measures were designed to confine the impacts attributable to the use of ORVs to designated areas. NPS designed other mitigation measures to limit conflicts between visitors seeking recreational opportunities that may not be compatible with the use of ORVs. Additional mitigation measures were designed to preserve the wilderness

characteristics of proposed wilderness areas within Glen Canyon or to comply with existing laws such as the Endangered Species Act. NPS will also mitigate environmental impacts through rehabilitating user-created routes and ORV areas that will be closed as a result of implementing the plan.

Monitoring

Monitoring procedures will be developed to identify resource impacts, assess and document the extent of disturbance, and mitigate impacts or restore areas affected by off-road use and disturbance. NPS will monitor potential indicators to determine whether to take additional management actions.

Monitoring techniques would include staff observations and documentation of potential indicators described in the plan. Some indicators, such as the presence of illegal user-created routes (tracks outside of designated ORV routes and areas and off of GMP roads) and expansion of areas designated for off-road use may be monitored periodically by aerial photography. Glen Canyon staff would regularly monitor the number of motor vehicle accidents, vandalism, and other compliance issues resulting from on-road and off-road use of motor vehicles.

Monitoring and Mitigation for Cultural Resources Under the Programmatic Agreement Among the National Park Service, the Arizona State Historic Preservation Office, and the Utah State Historic Preservation Office Regarding Off-road Vehicle Management Plan for Glen Canyon, Pursuant to the National Historic Preservation Act (NHPA)

Archeological surveys were conducted to sample the study areas under discussion in the plan/FEIS. After consultation with the State Historic Preservation Office (SHPO), the Tribes, and other interested parties, additional archeological surveys may be conducted if deemed necessary based on the analysis of this data in conjunction with relevant environmental variables. Surveys may be conducted to identify resource areas of traditional importance to the Tribes as deemed necessary following consultation with the Tribes, the SHPO, and other interested parties. Cultural resource identification efforts and mitigation strategies for National Register-eligible sites and landscapes are stipulated as provisions of a programmatic memorandum of agreement.

Monitoring and Mitigation for Endangered Species Under the Glen Canyon Off-road Vehicle Management Plan and Environmental Impact Statement Biological Assessment, pursuant to the Endangered Species Act (ESA)

NPS has outlined a series of conservation measures (Attachment B) for the protection of species listed under the Endangered Species Act. These measures were submitted to the United States Fish & Wildlife Service (USFWS) as part of a biological assessment in compliance with Section 7 of the Endangered Species Act. The measures will be implemented to mitigate most effects on endangered species. These measures will be carried out by trained NPS staff and project personnel using USFWS protocols. The implementation of these measures will avoid take of listed species that may be found in the vicinity of the proposed action area. NPS will include protection measures for listed species – Southwestern willow flycatcher, California condor, Mexican Spotted owl, yellow-billed cuckoo, Silver cholla cactus, and Bradburys cholla cactus,

and Jones cycladenia, as part of the educational materials developed for the ORV permit and the communication strategy.

Temporary Closures

Glen Canyon may temporarily close areas designated open under the plan/FEIS. These areas will be temporarily closed for resource protection purposes, including cultural and natural resource surveying and monitoring. Any temporary closures will be published in the Superintendent's Compendium and will be posted at the closed area.

Off-road Use Permit System

- A permit system will be implemented, in part, as a means to better manage the ORV management plan. Requiring a permit for operators desiring to travel off-road in Glen Canyon will provide a means to monitor use and educate operators about rules and regulations, safety, and resource protection.
- Permits will be used to recover NPS costs for managing areas designated for off-road use. Costs include monitoring, signs, and education programs, as well as the administrative costs associated with administering the permit system.
- Permits will be required for all off-road use at accessible shoreline ORV areas, Lone Rock Beach, Lone Rock Beach Play Area, and designated ORV routes in Ferry Swale and other areas.
- Permits may be revoked for violation of applicable Glen Canyon regulations or terms and conditions of the permit.
- Permits will be available for sale on-site at several permit issuing station within Glen Canyon, by mail, and on-line via a web-based system. The E-Government Recreation One Stop Initiative focuses on creating a web-based resource for the public that offers a single point of access to information and reservations for federal recreational opportunities.
- ORV permits will be issued on a per vehicle basis.
- The ORV permit will allow the permitted vehicle to access all designated ORV routes and areas within Glen Canyon.
- Permits will be available for sale for a short-term visit or on an annual basis.
- The annual number of ORV permits issued is not limited at this time.

Lone Rock Beach

Lone Rock Beach will remain open by permit to conventional motor vehicles, OHVs, and street-legal ATVs. A portion of Lone Rock Beach will be designated as a vehicle-free zone, or an area where motor vehicles of any type are not permitted, to provide a unique experience for tent campers who prefer to be separated from all motor-vehicle users. NPS will designate the vehicle-

free zone during the seasons of highest use; NPS will vary the size and location of vehicle-free zones based on the water level of the lake.

All operators of motor vehicles must obey all Arizona state traffic laws while on Lone Rock Beach. The speed limit on Lone Rock Beach will be 15 miles per hour (mph) or as posted. Motor vehicle operators must conform to all applicable state licensing, registration, and insurance requirements.

Lone Rock Beach Play Area

Lone Rock Beach Play Area (180 acres) will remain open by permit to conventional motor vehicles, OHVs, and street-legal ATVs. All motor vehicles operating on the dunes will be required to obtain an ORV permit and display a red or orange whip safety flag and otherwise follow the requirements of Utah law for operating an OHV on dunes (U.C.A. §§ 41-22-10.7).

Accessible Shoreline Areas

Off-road use at Warm Creek shoreline area will be permanently closed. Fourteen shoreline areas (12 existing areas, plus Nokai Canyon and Paiute Farms) will be authorized for use by conventional motor vehicles and street-legal ATVs year-round, only by permit, subject to water-level closures. No OHV use will be allowed. Travel routes within authorized ORV areas (including areas exposed by receding lake levels) will be designated by signs and other methods to continue to allow access to the shoreline. Eight shoreline areas (Blue Notch, Bullfrog North and South, Crosby Canyon, Dirty Devil, Farley Canyon, Red Canyon, Stanton Creek, and White Canyon) will be authorized for use by conventional motor vehicles year-round, but will be closed to street-legal ATV use from November 1 through March 1. No OHV use will be allowed. Portions of Bullfrog North and South and Stanton Creek ORV areas will be designated as vehicle-free zones to provide a unique experience for tent campers who prefer to be separated from all motor-vehicle users. NPS will designate the vehicle-free zones during the seasons of highest use; NPS will vary the size and location of vehicle-free zones based on the water level of the lake. All use at these areas will be allowed by permit only and will be subject to water-level closures. The speed limit at accessible shoreline areas will be 15 mph or as posted. Quiet hours between 10:00 p.m. and 6:00 a.m. will be established to prevent excessive noise. Motor vehicle operators will be required to conform to all applicable state licensing, registration, and insurance requirements.

Travel on GMP Roads

Street-legal ATVs will be authorized to operate on most paved GMP roads in Glen Canyon, with the exception of the Lees Ferry access road and paved roads in the Lees Ferry developed area. The speed limits on paved GMP roads will not change and will remain as currently posted.

OHVs and street-legal ATVs will be authorized on unpaved roads, with the exception of most roads in the Orange Cliffs Special Management Unit. The Poison Spring Loop (Route 633 to Route 730) of the Orange Cliffs Special Management Unit will be open to OHVs and street-legal ATVs. The speed limit on unpaved GMP roads will be 25 mph or as posted.

Permits are not required for street-legal ATVs or OHVs to travel on GMP roads.

Ferry Swale and Other ORV Routes

To facilitate access to adjacent BLM lands and provide connectivity with GMP roads and existing trailheads, conventional motor vehicles, OHVs, and street-legal ATVs will be allowed by permit to operate on approximately 21 miles of designated ORV routes in Ferry Swale and other areas of Glen Canyon. The speed limit on these routes, for all vehicles, will be 25 mph or as posted. Other GMP roads in Ferry Swale are addressed above in the section "Travel on GMP Roads."

Changes to the Selected Alternative

Alternative E is revised to reflect that an off-road vehicle permit would not be required for the following routes: Middle Moody Canyon Trailhead (2 miles), East Gypsum Canyon Overlook (1.2 miles), Imperial Valley (.75 miles), and Gunsight Springs Trailhead (1 mile). This change will provide continuity for users who travel between GMP roads and these routes, since a permit is not required to travel on connecting GMP roads.

The selected alternative is revised to include conservation measures for Threatened and Endangered Species as presented in the Final Biological Assessment (BA) available online here: <https://parkplanning.nps.gov/GLCAORVFWSConcurrence>. The Final BA revises the expected impacts to listed species within the project area due to the conservation measures. The U.S. Fish and Wildlife Service (USFWS) has concurred with the NPS that the selected alternative is "not likely to adversely affect" the California condor (*Gymnogyps californianus*), Jones cycladenia (*Cycladenia humilis* var. *Jonesii*), and Siler pincushion cactus (*Pediocactus sileri*) as the effects of this action are insignificant and discountable for the reasons stated in the BA. Additionally, the selected alternative will have "no effect" on the Brady's pin-cushion cactus (*Pediocactus bradyi*). USFWS also concurred with a "may affect, not likely to adversely affect" determination for the Mexican spotted owl (*Strix occidentalis lucida*), Southwestern willow flycatcher (*Empidonax traillii extimus*), and Yellow-billed cuckoo (*Coccyzus americanus*). This recommendation is a change from the previous recommendation given in the draft BA appended to the Final EIS. The BA now includes additional conservation measures for all three species that will mitigate adverse impacts. In addition, it clarifies that there is no suitable Southwestern willow flycatcher nesting habitat and no yellow-billed cuckoo suitable breeding habitat with 0.5 miles of the project area greatly reducing the potential for adverse impact to those species.

Consultation

ENDANGERED SPECIES ACT

The National Park Service completed consultation with the U.S. Fish and Wildlife Service (USFWS) on off-road vehicle use and on-road street legal ATV and OHV use. As described above, the USFWS concurred with the NPS determination that the project will have "no effect" on the Brady's pin-cushion cactus (*Pediocactus bradyi*) is "not likely to adversely affect" the California condor (*Gymnogyps californianus*), Jones cycladenia (*Cycladenia humilis* var. *Jonesii*), and Siler pincushion cactus (*Pediocactus sileri*), and "may affect, not likely to adversely affect" determination for the Mexican spotted owl (*Strix occidentalis lucida*), Southwestern willow flycatcher (*Empidonax traillii extimus*), and Yellow-billed cuckoo (*Coccyzus americanus*). The USFWS concurred with this determination for the following reasons:

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- Brady's pin-cushion: The effects of the action on Brady's pin-cushion are insignificant and discountable since the selected alternative includes a closure to all street-legal ATVs and OHVs of the Lees Ferry District and all paved roads, and regular monitoring at known occupied sites. NPS has committed to maintaining regular patrols and education of the public that the road is closed to all but conventional vehicles.
- Siler pincushion cactus: There is no known occupied habitat for the species within the action area or in the park. Some roads in existence prior to the establishment of Glen Canyon National Recreation Area cross areas of Moenkopi Formation badlands, but not the specific geologic member that the species prefers. If future surveys discover populations appropriate actions will be taken to prevent any effects. Also, there are no proposed changes to the GMP road network (widening, re-routing, etc.) that could potentially affect newly located plants. NPS has committed to additional surveys and protection measures including closures and barriers if the species is detected in the action area.
- Jones cycladenia: Accessible shorelines with Chinle outcrops include Copper Canyon, Paiute Farms, and Blue Notch. Informal surveys have been conducted at Blue Notch, but not the other two shorelines. As part of the proposed action, additional surveys will be conducted at all suitable shorelines using recommended protocols for rare plants developed by the USFWS. If populations are found they will be excluded from the action area by the use of a barrier. If additional future surveys discover new populations appropriate actions will be taken to prevent adverse effects. NPS has committed to additional surveys and protection measures including closures if new populations are detected in the action area.
- California condor: The species is rare in the action area, a condor-vehicle collision is extremely unlikely and the possibility is discountable, and increases in noise levels will be minimal. Also, stress related effects from noise and vehicle activity would be considered discountable and insignificant due to general avoidance by birds of areas where humans occur. Project implementation activities will be relatively short term, involve relatively few workers, and will produce relatively little noise and dust. The NPS has committed to conservation measures including among others appropriate contacts in case condors are detected in the action area, reduced speed limits, monitoring of condor activities, additional protection measures including temporary closures, and providing information to recreationists on the species status and behavior.
- Mexican spotted owl: Although the likelihood that a Mexican spotted owl would be present in the area affected by the proposed action is low, it is not discountable due to extensive overlap with suitable and designated critical habitat. Thus there would be potentially adverse impacts to individuals. Potential effects from vehicle activity (collisions) along back country unpaved roads would be extremely unlikely and are considered discountable. Any project implementation activities (e.g. installation of signs, restoration of illegal ORV routes) will occur outside of the Mexican spotted owl breeding season. Reduced speed limits and the general lack of overlap between the road networks, known locations of owls indicates that direct effects (e.g., collisions) are discountable. The NPS has committed to Conservation Measures to help mitigate these impacts, and

include among others additional surveys for owls starting in 2017, altering routes and area boundaries to protect owls, avoidance of all known owl nests, reduced speeds for vehicles, additional signage and information on owls for recreationists, and applying specific guidelines and protection measures including area closures within 0.5 miles for protection of owls that may be detected.

- Southwestern willow flycatcher Although the endangered southwestern willow flycatcher has been observed in the vicinity of the action area (Spence et al. 2011), its presence can be considered rare and transient, and some records may in fact represent migration of other subspecies through the region. No suitable nesting habitat occurs within 0.5 miles of the action area. Effects that alter foraging, migrating, and roosting behaviors to individuals may occur, primarily from noise and recreational activities, at some action area sites. Effects will be insignificant and discountable, as the species is rarely detected in the park. As described above, any potentially disturbing actions or project implementation activities (e.g. installation of signs, restoration of illegal ORV routes) will cause only minor effects on migrating flycatcher individuals, with no effects on breeding since suitable nesting habitat does not occur within 0.5 miles of the action area and the species does not currently breed within 50 miles of the boundaries of Glen Canyon. The Conservation Measures (Section 3.3) include among others additional survey work as warranted based on observations and application of additional guidelines and protection measures including closures if birds are detected in the action area.
- Yellow-billed cuckoo: Although the yellow-billed cuckoo has been observed in the action area at Clay Hills Crossing (Spence et al. 2011), its presence can be considered rare and transient. The species does not currently breed near the action area, nor is there any currently appropriate breeding habitat within 0.5 miles of the action area (see under Designated Habitat 9.3). However, all potential effects cannot be considered discountable due to overlap with suitable and some proposed critical habitat. Thus there would be potentially adverse impacts to individuals. Effects from vehicle activity (collisions) along back country unpaved roads would be extremely unlikely and are considered discountable. Any project implementation activities (e.g. installation of signs, restoration of illegal ORV routes) will occur outside of the cuckoo breeding season. Reduced speed limits and the general lack of overlap between the road networks, known locations of cuckoos suggests that direct effects (e.g., collisions) are discountable. Noise-related impacts to roosting, migrating or foraging individuals may occur, however these effects will be insignificant and discountable. Adherence to the Applicant Committed Conservation Measures (Section 3.3) will help mitigate these impacts, and include among others additional surveys for cuckoos starting in 2017, altering routes and area boundaries to protect documented occurrences, avoidance of all known nests, reduced speeds for vehicles, additional signage and information on cuckoos for recreationists, and applying specific guidelines and protection measures including area closures within ½ mile for protection of individual birds that may be detected. Any project implementation activities (e.g. installation of signs, restoration of illegal ORV routes) will occur outside of the yellow-billed cuckoo breeding season. In order to support the determination, the Applicant Committed Conservation Measures (Section 3.3) include among others survey work associated with accessible shoreline areas and application of additional guidelines and protection measures including closures if birds are detected in the action area.

NATIONAL HISTORIC PRESERVATION ACT

Over the course of the planning process, NPS engaged in a robust consulting party process to develop a Programmatic Agreement for Off-Road Vehicle Use at Glen Canyon. A full list of consulting parties as well as a thorough description of the consultation process is available in the FEIS. The Programmatic Agreement is available online at:

<https://parkplanning.nps.gov/document.cfm?parkID=62&projectID=19520&documentID=69851>

TRIBAL CONSULTATION

In support of the NPS commitment for government-to-government consultation with the 19 associated Native American tribes and bands, and as a reflection of the shared boundary of Glen Canyon and the Navajo Nation, NPS has engaged in a continuing process of consultation with these tribes and bands. Over multiple years, NPS corresponded by letter and met in person with Tribes, including the Navajo Nation, to fulfill the government-to-government consultation requirements. NPS modified the selected alternative between the Draft EIS and the Final EIS to address Hopi Tribe concerns. The Navajo Nation concurred that the proposed actions would not adversely affect any Navajo Traditional Cultural properties. A full description of the Tribal consultation is available in the FEIS.

COOPERATING AGENCIES

NPS invited the five counties neighboring Glen Canyon to become cooperating agencies in the EIS process in recognition of their involvement with road maintenance, travel management and recreation planning. Four counties in southern Utah – Kane, Garfield, San Juan and Wayne-accepted the offer; Coconino County in Arizona, declined. Cooperating agencies were asked to provide input on draft alternatives, impact analysis as well as provide background information on plans for adjacent lands and socioeconomic information. These counties provided comments on internal drafts of the both the DEIS and FEIS. A full description of the consultation efforts is included in the FEIS.

Basis for Decision

Alternative E (Mixed Use) has been selected for implementation. The National Park Service considered factors such as the extent to which alternatives meet plan objectives, how the alternatives minimized resource impacts, management flexibility, existing management plans, access to adjacent lands, and Glen Canyon's enabling legislation.

All of the alternatives considered satisfy the requirements of 36 CFR 4.10 and establish clear policies to guide recreational off-road vehicle recreational use at Glen Canyon. However, alternative E was preferred for the following reasons: Alternative E provides the widest range of recreational use experiences for all visitors while mitigating and minimizing impacts to natural and cultural resources and alternative E supports access by conventional vehicles, street-legal ATVs as well as OHVs, consistent with the park's General Management Plan (GMP). Additionally, consistent with the enabling legislation, alternative E provides recreational use and enjoyment of the area while preserving the scenic, scientific, and historic features that contribute to public enjoyment of the area.

LONE ROCK BEACH AND PLAY AREA AND ACCESSIBLE SHORELINES

Alternative E best preserves the existing access along the shoreline of Lake Powell while also limiting disturbance to sensitive wildlife species. The separation of motorized and non-motorized users at a number of accessible shorelines under Alternative E best provides for recreational opportunities for all types of visitors, potentially reducing conflicts and enhancing visitor experience. Alternative E would result in limited new adverse impacts along the Lake Powell shoreline as the use proposed is consistent with the historic use of the off-road vehicle areas along the shoreline. In addition, alternative E provides access but does not allow all OHVs on shorelines, except at Lone Rock Beach, limiting the potential for these areas to become used as recreational driving areas which would detract from these areas as backcountry access points to Lake Powell. The NPS did not select alternatives B or D because these alternatives limit access to Lake Powell, under alternative B to only existing developed areas and under alternative D, only to developed areas and five shoreline areas. Providing recreational use and enjoyment of Lake Powell is part of the park's enabling legislation and providing access at multiple locations through off-road vehicle access is consistent with this purpose. Alternative C was not selected because it failed to provide wildlife protections and opened shoreline areas where impacts would be difficult to mitigate.

OFF-ROAD VEHICLE ROUTES

Alternative E best provides connectivity with adjacent BLM routes and the telecommunications facility in the Ferry Swale area while also improving the condition of vegetation and soils by restoring 33 miles of routes. This alternative continues the historic access to the area, including a widely used overlook destination. Additionally, this alternative best continues to provide access while also protecting cultural resources in the area. The NPS did not select alternative B because it would close access to the Ferry Swale area. Alternative D was not selected because it would result in inconsistent management across NPS and BLM boundaries. Alternative C does not minimize impacts to cultural resources in the Ferry Swale area as well as alternative E.

ON-ROAD OHV AND STREET-LEGAL ATV USE

Alternative E is consistent with current park zoning for vehicle use on roads, promotes access between adjacent lands and provides opportunities both for visitors who desire to see or drive OHVs and street-legal ATVs on roads as well as those who do not wish to see or hear non-conventional vehicles. Alternative E provides OHV and street legal ATV access on 8 miles of the Poison Spring Loop (Route 633 proceeding north to Route 730) in the Orange Cliffs. This 8-mile portion of road was identified through public comment as an important section of road needed to complete a 100 mile loop utilized by recreational OHV users, most of which is within BLM-administered areas. This area is surrounded by cattle grazing and does not contain the outstanding scenic values found elsewhere in the Orange Cliffs. Therefore, alternative E was selected in order to provide connection with the 100 mile OHV loop route outside the park. The NPS did not select alternative D, which prohibits OHVs and street-legal ATVs in the Orange Cliffs entirely, because this alternative would not provide connectivity to allow for continuous OHV loop route on adjacent lands. The NPS did not select alternative B which would have only allowed street-legal ATVs on GMP roads, except in the Orange Cliffs because this alternative would not provide consistency in access to adjacent lands and would prohibit OHV use on-roads.

The NPS did not select alternative C, because it fails to provide an opportunity on any GMP roads for visitors to recreate without encountering non-conventional motor vehicle traffic.

Additionally, previous planning efforts for the Orange Cliff Management Unit emphasize recreational opportunities that emphasize the remote and solitary nature of the area which are not consistent with all classes of OHV use. The NPS did not select alternative C, because it fails to provide an opportunity for visitors who do not want to encounter OHVs on roads. Additionally, previous planning documents for the Orange Cliff Management Unit reflect that recreational opportunities in this area should be focused on backcountry, remote, overnight experiences which are not consistent with on-road OHV and street-legal ATV use.

Environmentally Preferred Alternative

NPS is required to identify the environmentally preferable alternative in a ROD. NPS, in accordance with the Department of the Interior policies contained in the Departmental Manual (516 DM 4.10) and the CEQ's NEPA's Forty Most Asked Questions, defines the environmentally preferable alternative (or alternatives) as the alternative that best promotes the national environmental policy expressed in NEPA section 101(b) (516 DM 4.10). In its Forty Most Asked Questions, the CEQ further clarifies the identification of the environmentally preferable alternative, stating, "Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources" (Q6a).

After completing the environmental analysis, NPS identified "Alternative B, No Off-road Use," as the environmentally preferable alternative in the plan/FEIS because it establishes management measures that would reduce the impact of off-road use on the landscape. These measures included the following:

- Eliminating off-road use at Lone Rock Beach, the Lone Rock Beach Play Area, and accessible shoreline areas would eliminate soil damage and provide a better opportunity for natural resources, including vegetation, to be restored. Additionally, cultural and paleontological resources in the area would be protected.
- Eliminating illegal user-created ORV routes at Ferry Swale would provide a better opportunity for natural resources in this area to be restored. Additionally, cultural and paleontology resources (known and unknown) in the area would be protected.
- Eliminating off-road use would maintain the isolated and primitive characteristics of the Glen Canyon backcountry by limiting operation of motor vehicles to designated roads.

CONCLUSION

Overall, of the five alternatives considered in detail in the final plan/EIS, the selected alternative best meets the purpose and need of the final plan/EIS and is expected to support the long-term protection, preservation, and restoration of the resources and values of Glen Canyon. Adverse environmental impacts that could occur are limited in context and intensity, with direct and indirect impacts that are not expected to be significant. None of the impacts related to the implementation of the selected alternative will violate the NPS Organic Act or any other

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applicable law, and implementation of the selected alternative will allow Glen Canyon to protect its resources and values for enjoyment of current and future generations.

The required "no-action period" before approval of the ROD was initiated on January 17, 2017, with the EPA's *Federal Register* notification of the filing of the final plan/FEIS (78 FR 12353).

The official responsible for implementing the selected alternative is the Superintendent of Glen Canyon National Recreation Area.

Approved by:



Sue E. Masica

Regional Director, Intermountain Region



Date

ATTACHMENT A

NON-IMPAIRMENT DETERMINATION FOR THE NATIONAL PARK SERVICE SELECTED ALTERNATIVE

Glen Canyon National Recreation Area Off-Road Vehicle Management Plan and Environmental Impact Statement

National Park Service (NPS) *Management Policies 2006* (section 1.4) require analysis of potential effects to determine whether or not an NPS action would impair a park's resources and values (NPS 2006b). The selected alternative for managing off-road vehicles (ORVs) in Glen Canyon National Recreation Area (Glen Canyon) is Alternative E, with some minor modifications as described in the Record of Decision.

The fundamental purpose of the national park system, established by the *Organic Act* and reaffirmed by the *General Authorities Act*, as amended, is to conserve park resources and values for the enjoyment of future generations. 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 management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a 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.

Pursuant to NPS *Management Policies 2006*, 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." Whether an impact constitutes impairment 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 or other relevant NPS planning documents as being of significance.

An impact would be less likely to constitute 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

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activities undertaken by concessioners, contractors, and others operating in a park. Impairment may also result from sources or activities outside a park.

For the selected alternative, a determination of non-impairment is made for each of the impact topics carried forward for detailed analysis in the EIS. Pursuant to the *Guidance for Non-Impairment Determinations and the NPS NEPA Process* (NPS 2011b), impairment findings are not necessary for visitor experience, socioeconomics, public health and safety, environmental justice, land use, or park operations because these impact topics are not generally considered to be park resources or values, and are therefore not subject to the written impairment determination requirement found in *NPS Management Policies 2006*. A description of the current state of each of the resource topics evaluated for impairment can be found in Chapter 3 of the EIS, "Affected Environment."

Glen Canyon's purpose and significance were considered during the impairment determination process for the selected alternative. Congress established Glen Canyon to "provide for the public outdoor recreation use and enjoyment of Lake Powell and lands adjacent thereto in the states of Arizona and Utah and to preserve the scenic, scientific, and historic features contributing to the public enjoyment of the area"(16 USC 460dd). Glen Canyon's purpose and significance are rooted in its legislation and its natural and cultural resources.

Statements of a park's significance describe why a park is important within a global, national, regional, and ecosystem-wide context and are directly linked to the purpose of the park.

Glen Canyon is significant for the following reasons:

- Glen Canyon offers a tremendous diversity of both water- and land-based recreational opportunities.
- Glen Canyon contains Lake Powell, the second-largest human-made lake in North America, which provides both a unique opportunity to recreate in a natural environment and a transportation corridor to remote backcountry areas of Glen Canyon.
- Glen Canyon is in the heart of the Colorado Plateau region, which offers a unique combination of water and desert environments. It offers a natural diversity of rugged water- and wind-carved canyons, buttes, mesas, and other outstanding physiographic features.
- The climate and physical features of Glen Canyon have created local environments favorable to the preservation of scientifically valuable objects, sites, populations, habitats, or communities that are important in and of themselves, or provided opportunities to add to our understanding of past or ongoing events.
- Evidence of 11,000 years of human occupation and use of resources in Glen Canyon provides a continuing story of the prehistoric, historic, and present-day affiliation of humans and their environment.

- Glen Canyon constitutes a substantial part of the outstanding public lands of the Colorado Plateau.

Soils

Soils in Glen Canyon are integral to maintaining the physical, biological, and chemical integrity of the Glen Canyon ecosystem. The physical impacts on desert soils from off-road use have been well documented. Damage to soils from off-road use includes destruction of soil stabilizers (e.g., macrofloral elements [plants], microfloral elements [lichen, fungal, and biological soil crusts], and inorganic elements [physical soil crusts]), soil compaction and reduced rates of water infiltration, accelerated rates of surface water runoff and erosion, accelerated rates of wind erosion, and declines in soil productivity. Damage to desert soils can result from a single pass of a vehicle. In the deserts of the Colorado Plateau, biological soil crusts can account for 70% of the living soil cover. Disturbance and damage by vehicles and may require hundreds of years or more for full recovery. Under the selected alternative, impacts to soil stabilizers (macro- and microfloral, and inorganic elements) soil compaction, reduced rates of water infiltration, and accelerated rates of water runoff and erosion, wind erosion, and decline in soil productivity may occur on accessible shorelines, Lone Rock Beach and Play area, and on OHV routes. Impacts from on-road OHV use are not expected to be as severe or noticeable as roadways have been designed and engineered to be driven upon, and soils existing along these routes have been disturbed previously through blading, compaction, and other earthmoving activities required for road construction and routine maintenance.

The severity of impacts to soils varies by type of use and location. Impacts to soils in some areas and routes would continue to be highly noticeable, apparent, and severe. Soil impacts would be the most intense at accessible shorelines with the highest use, such as Bullfrog North and South, Stanton Creek and Lone Rock Beach and play area. Past off-road use at these areas has contributed to existing soil degradation that is exacerbated by the presence of moderately erodible Farb-Pagina type soils and repeated use. As a result, the soils in these areas may not recover. Impacts in the play area are especially severe and are expected to continue into the future. For this reason, Glen Canyon has intentionally confined recreational off road driving to the play area in order to ensure that this level of impact does not occur in other locations in Glen Canyon.

Although the selected alternative will result in the continuation of severe impacts in localized areas, it will not result in impairment to soils at Glen Canyon because the impacts would be confined to existing routes and areas. New signs and educational materials will inform visitors where off-road and on-road OHV use is acceptable and additional monitoring efforts will help park management assess where visitors are driving outside of designated routes and areas or outside of road corridors. Additionally, Glen Canyon would mitigate impacts to soils by using enforcement and closures to ensure additional erosion does not occur outside designated routes and areas.

In addition, impacts to soils under the selected alternative are confined to a small percentage of the soils in Glen Canyon. The selected alternative's total footprint of direct impacts on soils from off-road and on-road use is estimated to be less than 2% of the more than one million acres of mapped soils within Glen Canyon. The most severe impacts to soils occur at the play area, which

consists of roughly 120 acres. Impacts to soils along accessible shorelines and the play area make up a less than 1% of the 2,000 mile shoreline of Lake Powell. Narrowing the context to soil type, the soil type most impacted by off-road use and on-road OHV use is the moderately erodible Farb-Pagina. Under the selected alternative, less than 1% of the 66,766 acres of this soil type are impacted. The total number of acres of GMP roads impacted under the selected alternative is 536 acres, which constitutes less than 1% of soils within Glen Canyon. Overall, the selected alternative would not result in impairment because impacts, while severe in localized locations, would not impact the integrity or functioning of soils at Glen Canyon. The selected alternative would not impair the integrity or functioning of any particular type of soils, including the Farb-Pagina soils, at Glen Canyon. Additionally, under the selected alternative, soils in Glen Canyon would experience some beneficial impacts. Some soils may improve where user- created routes are restored and at Warm Creek where shoreline use is prohibited.

Vegetation

Off-road use can adversely impact native plants and plant communities at Glen Canyon directly, by crushing and uprooting of plants, and indirectly, by altering soil properties and by carrying and dispersing invasive plant seeds that replace native vegetation. Native vegetation is important for many reasons, including wildlife habitat and water quality protection. Some slopes and heavily used areas designated for off-road use at Glen Canyon are completely denuded of native vegetation, except for partial areas inhabited by sand sagebrush. Some species, such as snakeweed, dicoria, and ragweed, can survive off-road use and are common in disturbed areas in Glen Canyon. Most species are capable of recovering from direct contact with ORVs; however, blackbrush does not reestablish after elimination of the species. Invasive plants pose a threat to native biodiversity, including to native plant populations. Glen Canyon has an active and ongoing program to control invasive plant species. Under the selected alternative, the impacts to vegetation may continue to occur along accessible shorelines, Lone Rock Beach and Play area and on OHV routes. Impacts from on-road OHV use are not expected to be as severe or noticeable as roadways have been designed and engineered to be driven upon, and vegetation along these routes have been disturbed previously through blading, compaction, and other earthmoving activities required for road construction and routine maintenance.

The severity of impacts to vegetation varies by location and type. Vegetation impacts would be the most intense at accessible shorelines with the highest use, such as Bullfrog North and South, Stanton Creek and Lone Rock Beach and play area. Past off-road use at these areas contribute to degraded soils and vegetation making impacts at these locations more severe. Vegetation types with the highest impacts would be blackbrush, sand sagebrush, and shadscale. Impacts in the play area are currently and would continue to be especially severe. For this reason, Glen Canyon has intentionally confined off-road use of this type to the play area in order to ensure that this level of impact does not occur in other locations in Glen Canyon.

Although the selected alternative will result in the continuation of severe impacts in localized areas, it will not result in impairment to vegetation at Glen Canyon because the impacts would be confined to existing routes and areas. New signs and educational materials will inform visitors where off-road use and on-road travel is acceptable. Additional monitoring efforts will help park management assess where visitors are not staying within designated routes and areas or on roads. Monitoring for invasive plants in these areas will help ensure they do not spread beyond the

designated areas. Additionally, Glen Canyon would mitigate impacts to vegetation by using enforcement and closures to ensure additional crushing and erosion does not occur outside designated routes and areas.

In addition, impacts to vegetation under the selected alternative are confined to a small percentage of the vegetation communities in Glen Canyon. The selected alternative's total footprint of direct impacts on vegetation from off-road and on-road use is estimated to be less than 2% of the more than one million acres of mapped soils within Glen Canyon. The most severe impacts to soils occur at the play area, which consists of roughly 120 acres. Impacts to vegetation along accessible shorelines make up less than 1% of the 2,000 mile shoreline of Lake Powell. Finally, narrowing the context to vegetation type, the vegetation type most impacted by off-road use and on-road OHV use under any alternative is the blackbrush, sand sagebrush, and shadscale vegetation types. Under the selected alternative, less than 1% any of these vegetation types are impacted by use that would be authorized under this plan. Overall, the selected alternative would not result in impairment because impacts, while severe in localized locations, would not impact the integrity or functioning of vegetation at Glen Canyon. The selected alternative would not impair the integrity or functioning of any particular type vegetation type, including blackbush, at Glen Canyon. None of the vegetation types or species impacted by off-or on road use will be eliminated from the park because of this use. The integrity of these vegetation community types will continue to persist in abundance outside of the delineated routes and areas. These soils would continue to function on more than 98% of the Glen Canyon. Additionally, under the selected alternative, vegetation in Glen Canyon would experience some beneficial impacts. Some vegetation communities may improve where user-created routes are restored and at Warm Creek where shoreline use is prohibited.

Wildlife and Wildlife Habitat

Wildlife is known to be affected by recreational activities, including off-road use, at Glen Canyon. Impacts occur in four primary categories: direct mortality, disturbance, noise, and habitat. The most vulnerable species to off-road activity at Glen Canyon include burrowing species, such as kangaroo rats and other rodents and reptiles that nest in open sandy sites and whose burrows are easily crushed. In addition to vehicles crushing habitat, engine noise can deafen a kangaroo rat and virtually eliminate its defensive hearing. Bighorn sheep are also known to be intolerant of noise and off-road activities, and can abandon areas where such activity is common.

A variety of common species have the potential to occur in the study area including nesting and feeding shore and wading birds, nesting raptors, desert reptiles and mammals, and birds. Impacts on wildlife from off-road use could include species disturbance and displacement, habitat destruction, and vehicle-wildlife collisions causing species injury or mortality. Species mortality would continue, especially for smaller mammals, amphibians, and reptiles. Species disturbance and displacement and vehicle-wildlife collisions would continue along roadways and edge habitat. Birds nesting on or near the ground at accessible shoreline areas would likely be more vulnerable to the effects of motorized vehicles, due to direct exposure of nests and young to visitors and motorized vehicles. Impacts in some areas would be highly noticeable, apparent, and severe, especially at specific accessible shorelines, Lone Rock Beach and play area and along designated ORV routes where vegetation has been severely damaged and habitat is limited.

However intense these impacts may be at specific locations, the selected alternative will not impair wildlife and wildlife habitat at Glen Canyon. Under the selected alternative wildlife would likely be displaced at the high use areas, including the accessible shorelines, Lone Rock Beach and play area, along OHV routes and on GMP roads. Similarly, wildlife disturbance along GMP roads will continue to impact wildlife. However, under the selected alternative certain mitigation measures will limit the impacts to wildlife. Vehicle quiet hours at accessible shorelines will mitigate impacts to nocturnal wildlife species in these areas. Seasonal closures to street-legal ATVs will also help reduce the potential for impairment to certain migratory birds. Finally, a 15mph speed limit will likely benefit wildlife in these area by reducing collisions.

In addition, impacts to wildlife and wildlife habitat under the selected alternative are confined to a small percentage of the habitat in Glen Canyon. The selected alternative's total footprint of direct impacts on soils and vegetation, and thus wildlife habitat, from off-road and on-road use is estimated to be less than 2% of the total 1.09 million acres of mapped soils within Glen Canyon. The most severe impacts to wildlife and habitat occur at the play area, which consists of roughly 120 acres. Most wildlife is already displaced for this area. Impacts to wildlife and wildlife habitat along accessible shorelines make up a less than 1% of the 2,000 mile shoreline of Lake Powell, leaving ample habitat for wildlife that chose shoreline areas. Additionally, many of these accessible shoreline areas are infrequently visited, allowing time for wildlife to use the areas undisturbed. Impacts may be noticeable and severe at specific locations, but not significant or noticeable in the context of these wildlife populations. Additionally, some wildlife would experience benefits under the selected alternative where existing shoreline and off-road vehicle routes would be restored. Regular monitoring would also benefit wildlife species. For all of these reasons, the selected alternative would not result in impairment to wildlife and wildlife habitat.

Special-status Species

NPS has a responsibility to meet its obligations under the NPS Organic Act and the federal Endangered Species Act of 1973 to conserve listed species and prevent detrimental effects to listed, threatened, or candidate species as a result of any proposed action. A number of federally listed species are likely to occur in the project area (such as the southwestern willow flycatcher [*Empidonax traillii extimus*], the California condor [*Gymnogyps californianus*], and the Mexican spotted owl [*Strix occidentalis lucida*]) and therefore may be affected by management actions. Because the plan/FEIS may affect, but is not likely to adversely affect, listed species, NPS has engaged in consultation with the U.S. Fish and Wildlife Service (USFWS) as required under Section 7 of the Endangered Species Act (16 USC 1536 (a)(2)). There are a number of special status species in Utah and Arizona that are also evaluated under this section.

Special-status reptiles and birds nesting or resting on or near the ground at accessible shoreline areas would likely be more vulnerable to the effects of motorized vehicles, due to direct exposure of nests and young to visitors and motorized vehicles. Mitigation measures are included within the selected alternative to minimize impacts to these species and ensure the plan will not result in impairment to these species. Discontinuing off-road use at Warm Creek would result in beneficial impacts on certain special-status species (e.g., kit fox, desert bighorn sheep, long-billed curlew, golden and bald eagle, and chuckwalla) in that area by allowing previously

disturbed habitat the opportunity to recover. Seasonal restrictions of street-legal ATVs during the winter months at eight shorelines would likely result in beneficial impacts to special-status species, particularly shorebirds and the desert bighorn sheep, from decreased disturbance during that time. Special-status species with the highest potential for impact would be those that inhabit blackbrush, sand sagebrush, and shadscale vegetation communities like the kit fox, burrowing owl, and chuckwalla. Deserts and arid regions are generally considered areas of low productivity and damage to arid vegetation can be immediate and long lasting, especially for rare, specialized plant species. Because adverse effects under the selected alternative would be slightly less than current conditions, and would be minimized through new rules, regulations, and resource protection measures, the selected alternative would not result in impairment to special status species at Glen Canyon.

After rigorous review and discussion, no mortality or take, as defined under the Endangered Species Act, is anticipated for federally listed species. Therefore, there is no potential for impairment of any of these species as no take will occur. The selected alternative includes specific conservation measures to avoid impacts, including avoiding areas where these species occur, monitoring, and improving enforcement efforts. For a full list of conservation measures, see Attachment B.

In conclusion, the selected alternative is not expected to impact the population or viability of any of these special-status species, including federally-listed species. Use along shorelines, roads, and on ORV routes will likely be sporadic. In some cases, such as the remote shorelines, special-status species may not be disturbed for days or weeks at a time. In the context of Glen Canyon, disturbance to special-status species may not be even be detectable. When considering impacts in the context of vegetation types and availability, the impacts remain small. Disturbance is expected to be isolated to areas of use, many of which have been disturbed by vehicle use since Glen Canyon was established, thereby not creating new disturbance. Mortality of federally-listed species is not expected to occur. Further, substantial intact undisturbed habitat remains for all of these species, despite use that may be authorized under this plan. In conclusion, none of the impacts to special-status species are expected to result in impairment.

Soundscapes

Solitude and natural quiet are an important attribute to Glen Canyon. The natural sound in some places in Glen Canyon is as low as 10 dBA, making it one of the quietest units of the National Park Service. Noise impacts from off-road use and on-road OHV use in Glen Canyon impacts wildlife, visitors, and adjacent wilderness character. The intensity of soundscape impacts is considered based on the decibel level of the sources involved and the number of times the noise occurs. The sound level and thus the intensity of impact is greatest closest to the source (e.g., the OHV, street-legal ATV, or conventional motor vehicle) and decreases with increasing distance. The intensity of impact also increases as the traffic volume of vehicles increases. A doubling of traffic volume results in a 3-dBA increase in L_{eq} holding all other factors constant. Because of the low natural sound level in much of Glen Canyon, a pass-by of an OHV or street-legal ATV may be heard over long distances depending on topographic features, reducing the listening area for humans and wildlife as explained in the methodology section of the FEIS. The intensity of soundscape impacts is also influenced by the operating characteristics of the vehicles—activities at higher speeds and with more frequent acceleration create a greater load on the vehicle engine

and higher noise levels compared to cruise conditions. Thus, the most intense soundscape impacts at Glen Canyon are associated with the Lone Rock Beach Play Area.

Under the selected alternative, 273,454 acres or 21.9% of Glen Canyon could potentially experience a 3 dB increase above the natural sound level due to motorized vehicle use on routes, areas and roads. These estimates do not consider topographic features which may preclude or accentuate how far noise is likely to travel. The selected alternative could result in slightly greater impacts on soundscapes than current conditions. The change in impacts under the selected alternative would be most noticeable in the vicinity of the eight accessible shorelines where street-legal ATV use would be allowed seasonally and along the eight miles of the Poison Springs Loop in the Orange Cliffs. During times when no motorized vehicles are operating in a particular area, there will be no impacts. Mitigation measures include the implementation of a 96 dBA limit which would significantly reduce the area potentially impacted by noise. The 25 mph speed limit on roads and 15 mph on accessible shorelines may also decrease noise impacts. At the local level, the designation of a seasonal vehicle-free area at Lone Rock Beach would reduce the intensity of potential impacts.

The soundscape is not expected to be impaired under the selected alternative because the quality of soundscapes in remote areas would remain high and similar to existing conditions and because impacts are not likely to be frequent or continual. As described above, noise impacts become less noticeable, especially to humans, as visitors move beyond the designated routes, areas and roads. The low number of vehicles traveling on many of the roads in Glen Canyon, as well as the low number of users on most shorelines significantly decreases the frequency the soundscape would be impacted. Additionally, with the exception of Lone Rock Beach and play area, OHV and street legal ATVs on accessible shorelines are primarily used to access these areas where vehicles are then parked. This means that the noise impacts are not frequent or continual in these areas. Therefore, opportunities to experience the natural sounds will continue to exist in Glen Canyon's backcountry and proposed wilderness.

Another context for evaluating the potential for impairment of the soundscape is whether the anticipated noise is acceptable in the GMP management zone where the actions are occurring. As noted in the introduction section, Glen Canyon is significant because of the recreational opportunities it offers. Existing roads, routes and accessible shorelines are consistent with the enabling legislation that provides for use and enjoyment of the area. The GMP zones designate areas where activities that produce noise may be expected. For example, motorized vehicle use within the Development Zone (which includes Lone Rock Beach and play area) is consistent with the objectives of that zone. Human activity and associated motorized vehicle noise is generally an expected and accepted element of Development and Recreation and Resource Utilization Zones. Thus, motorized vehicle use in such areas would likely result in less than significant impacts and no impairment of the soundscapes to those areas. Most soundscape impacts from the selected alternative occur in the Development and Recreation and Resource Utilization Zones.

When motorized vehicle use occurs in the appropriate Development and Recreation and Resource Utilization Zones, impacts on the natural soundscape can extend into the adjacent Natural Zone where such sounds are inconsistent with the management objectives of the zone. Areas where impacts from OHV or street-legal ATV use extend into the Natural Zone are along

unpaved GMP roads, including NPS 330, 332 and 450. However, the core of the Natural Zone along these roads will remain a pristine natural soundscape under the selected alternative. In addition, noise extending into this zone from vehicles authorized under the selected alternative will likely be infrequent, as use on these roads is currently low and is not likely to increase greatly (for example, see the L_{eq} analysis of roads in the Orange Cliffs Unit in the FEIS). In conclusion, impacts when considering the GMP management zones, including the natural zone (proposed wilderness), are not likely to result in impairment of the Natural Soundscape.

Archeological Resources

In the American southwest, archeological resources, some of which are also ethnographic resources, are often found in surface contexts and are vulnerable to effects from off-road use (Schiffman 2005; Spangler 2006; Sampson 2009). Impacts from off-road use have been particularly severe on public lands (Ouren et al. 2007). Scientific literature has been generated to assist land managers tasked with maintaining the health of ecosystems and the integrity of archeological sites, cultural landscapes, and ethnographic resources (Ouren et al. 2007; Sowl and Poetter 2004). These scientific studies often include discussions of off-road use effects, off-road use effects mitigation, site-restoration techniques, and research needs (Ouren et al. 2007). Soils are widely recognized in the scientific community as an important component of desert ecosystems (Dregne 1983; Lovich and Bainbridge 1999). ORV impacts on soils are particularly relevant to archeological resources. A more detailed discussion on impacts to soils from off-road vehicle use is described above under "Soils". Soil compaction has been linked to increased runoff resulting in the formation of rills and gullies particularly on elevated terrain and hill side-slopes. Surface runoff mobilizes the sediments containing the archeological deposits destroying their contexts in the process. Additionally, the damage to stabilizing crusts results in increased susceptibility to wind erosion. Wind erosion deflates archeological sites potentially combining different artifact assemblages from different time periods that become very difficult to interpret in terms of function, period of use, and ethnic affiliation (Grayson 2011). Vandalism and looting can also be indirect effect of off-road vehicle use. Both direct and indirect impacts to resources due to motor vehicles used off-road are likely to occur (Sampson 2009; Sowel and Poetter 2004).

Lithic and ceramic surface scatters are by far the most commonly occurring site type in those portions of Glen Canyon covered by this FEIS. All 219 sites identified in Glen Canyon constitute surface sites of some kind. This total includes 59 sites determined or recommended eligible for the National Register of Historic Places including the Hole-in-the-Rock Trail and Hole-in-the-Rock. It is likely that additional archeological and ethnographic resources will be exposed below the 3,700-foot contour as Lake Powell recedes from the existing shoreline. Though the number of these sites is unknown, there are likely significantly fewer than the 518 identified in pre-inundation data (Bureau of Reclamation 2007). These sites will be vulnerable to the same impacts as those now exposed above current water levels. A correlation appears to exist between road proximity and vandalism of archeological sites. Although subject to direct and indirect impacts from many sources, many archeological sites retain their integrity in shoreline environments.

54 USC 406108, commonly referred to as Section 106 of the National Historic Preservation Act, provides for the identification and resolution of adverse effects (impacts) to National Register listed or eligible archeological sites. In general, resolution of adverse effects is achieved by

consultation among one or more federal agencies, in this case NPS, relevant SHPOs, appropriate THPOs, and other consulting parties. Because adverse effects are likely to result from the selected alternative, the NPS has completed a programmatic agreement for ORV management at Glen Canyon; signed February 4, 2015. The programmatic agreement (PA) stipulates the legal authority under which the measures are being undertaken, the responsible parties, and the character and intensity of the measures themselves as well as the process for inventory, evaluation, and mitigation of effects to historic properties. The documents demonstrating compliance with Section 106 are presented in the appendix E of the FEIS. The PA is available online at:

<https://parkplanning.nps.gov/document.cfm?parkID=62&projectID=19520&documentID=69851>

The direct and indirect impacts under the selected alternative would be mitigated to some extent by implementation of NPS strategies to monitor, avoid, minimize, or mitigate ORV impacts.

These actions prevent impairment of these resources under the selected alternative. As part of monitoring cultural resources, sites in the Archeological Sites Management Information System (ASMIS) inventory are periodically evaluated under the ASMIS Site Condition Assessment program. Remedial actions are developed for sites that are found to be threatened by natural or man-made causes. In addition, NPS maintains the ability to prosecute looters and vandals of cultural resources under the Archaeological Resources Protection Act and other applicable regulations. The programmatic agreement also identifies the process that will be followed to pursue a phased identification and evaluation of additional historic properties. Additionally, NPS shall continue to develop Geographic Information Systems (GIS) databases to create zonal management models that will inform the prioritization of the phasing of identification and evaluation efforts. As described in the programmatic agreement (NPS 2015), the archeological sensitivity model would inform the location and timing of cultural resources inventory and site evaluation protocols for those portions of GMP roads and ORV routes that have not received adequate identification efforts. The trigger-point model would inform the location and timing of cultural resources inventory and site evaluation protocols for Lone Rock Beach and accessible shorelines at Glen Canyon in response to decreasing water elevations of Lake Powell and the exposure of documented and previously unidentified cultural resources. In locations where the NPS has determined through Section 106 consultation that the agency's identification and evaluation obligations have been met at specific locations through Class III inventory, no additional inventory and evaluation efforts would occur unless modifications to the area of potential effect occur below 3600 feet in lake elevation.

In conclusion, the efforts to avoid, minimize and mitigate impacts to cultural resources in the project area prevent impairment of archeological resources in Glen Canyon. Survey efforts and subsequent management actions to protect resources found protect these resources from impairment.

Ethnographic Resources

Ethnographic resources are objects and places, including sites, structures, landscapes and natural resources, with traditional cultural meaning and value to associated peoples (NPS 2006a). The Hole-in-the-Rock landscape inclusive of the road corridor seems to meet the criteria for a Traditional Cultural Property (TCP), a type of ethnographic resource, because it is significant to

members of the Church of Jesus Christ of Latter-day Saints as a location associated with their pioneer history, and it continues to be important in the maintenance of their ongoing communal identity and in their development as an ethnically distinctive group (Sucec 2012). The Church of Jesus Christ of Latter-day Saints community was a proponent for increased use by organized groups of the Hole-in-the-Rock road; they do not view pedestrian and vehicular use as having more impacts on this resource. Therefore, the selected alternative, and any increased motor vehicle traffic on the road will not result in impairment of this resource. Rather, the selected alternative may have a beneficial long term impact on ethnographic resources because it will allow continued access, including access by street-legal ATV and OHVs, to the site by members of The Church of Jesus Christ of Latter-day Saints for permitted activities such as re-enactments and over-night camping. Monitoring and enforcement under the selected alternative will help mitigate impacts from the potential for increased vandalism. Because the selected alternative will result in primarily beneficial effects, there will be no impairment to ethnographic resources.

Paleontological Resources

Glen Canyon contains a very extensive fossil record of Pennsylvanian- to Quaternary-aged resources. Fossil resources are finite and nonrenewable (Santucci et al. 2009). Particularly vulnerable to damage are the many dinosaur trackways that are managed in situ. The effects on desert soils from off-road use, such as accelerated surface water runoff and erosion, as documented in “Soils” also pertain to paleontological resources, which occur in local concentrations in lithologic units (Shipman 1981). Prolonged ORV-related damage to soils can result in exposed soil substrate, causing the exposure of paleontological resources and leading to weathering and erosion, as discussed below. Schiffman (2005) and others have described the potential of off-road use to impact resources on public lands by enabling collectors to reach remote areas, which facilitates greater resource damage from intentional collection and vandalism. Human disturbances, such as those from off-road use, can accelerate local rates of weathering and erosion through soil damage and the removal of vegetation cover. Other, more direct, impacts on paleontological resources include the outright removal of resources themselves, also referred to as fossil “poaching.” Under the selected alternative, these impacts may occur on accessible shorelines, Lone Rock Beach and Play Area, along OHV routes and GMP roads.

Under the selected alternative, impacts on paleontological resources from OHVs on GMP roads would not result in impairment because the roads are already constructed and maintained. The soft geologic materials of the Kayenta formation, which is found along GMP roads, are vulnerable to damage caused by off-road use. This formation is known to contain dinosaur tracks and trace fossils including tracks of small and large theropods. However, these roadways are previously disturbed from blading, compaction, and other earthmoving activities required for road construction, routine maintenance, and use. As a result, the new use of street-legal ATVs and OHVs would not result in any notable new harm to paleontological resources in these areas.

The severity of impacts under the selected alternative may vary based on location and geologic strata present. Of the strata that occurs throughout Glen Canyon, the most vulnerable to direct impacts from off-road use which are found near accessible shoreline areas include the Entrada Sandstone, Organ Rock, Moenkopi and Chinle formations. These formations contain notable track sites, reptile fossils and other sensitive paleontological resources. The resulting potential

for loss of these resources could likely be significant if the adverse effect represented direct, localized impacts on the landscape.

At Lone Rock Beach and Play Area, direct impacts on paleontological resources would be insignificant. While fossils have been known to occur in the eolian and alluvial deposits present in the bedrock material found elsewhere, at Lone Rock Beach and Play Area these deposits do not contain any known paleontological sites. Paleontological resource-containing strata present at the most highly visited accessible shorelines — Bullfrog North and South (though currently closed) and Stanton Creek — may experience localized severe impacts associated with off-road use within the authorized areas. However, impacts are concentrated to certain portions within authorized accessible shorelines and generally do not extend beyond authorized areas. Additionally, monitoring and enforcement of these areas under the selected alternative can mitigate adverse impacts to these resources. If currently unknown fossils are discovered, the selected alternative allows for closures to protect those resources depending on their significance.

Taken together, direct impacts would occur on approximately 775 acres of the sensitive strata of Tropic Shale, Organ Rock, Moenkopi, Chinle, Kayenta, and Navajo Sandstone formations found along unpaved GMP roadways. Within the landscape context of Glen Canyon National Recreation Area, which contains 1 million acres of geologic formations, this represents less than 1% of the total extent of those sensitive strata within the entire park unit. If paleontological resources present within these shorelines were affected, the resulting impacts would be highly noticeable, apparent, and severe at the specific accessible shorelines; however, in the context of the entire Lake Powell shoreline, impacts would be barely discernible in comparison to the entire approximate 2,000 miles of Lake Powell shoreline available at Glen Canyon. Impacts from the addition of OHVs and street-legal are thus not likely to impair paleontological resources in Glen Canyon.

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ATTACHMENT B

Monitoring and Mitigation for the

Glen Canyon Off-Road Vehicle Management Plan

Monitoring procedures for the plan/EIS will be developed during implementation of the ORV Management Plan to identify resource impacts, assess and document the extent of disturbance, and mitigate impacts or restore areas affected by off-road use and disturbance. Glen Canyon staff will monitor indicators to determine when to take additional management actions as described in Table 2. Monitoring and subsequent management actions include both species populations and habitat connected to species-specific protection measures listed in this section.

Monitoring techniques will include staff observations and documentation of indicators, such as the presence of social routes (tracks outside ORV routes and areas and off of designated roads) and expansion of areas designated for off-road use, which will be monitored periodically by aerial photography. Glen Canyon staff will regularly monitor the number of motor vehicle accidents, vandalism, and other compliance issues resulting from off-road use and on-road use of OHVs and street-legal ATVs.

Management actions described in the “Indicators for Monitoring and Management Actions” table will be implemented if monitoring indicates that off-road use or on-road use is impacting resources, or if trends are negative and resources are at risk. The decision to implement a specific management action will be based on feedback provided by the monitoring program, consultation with outside experts, the professional judgment of NPS staff and management, and the authorities available to the NPS.

Species-specific proposed conservation measures are listed under the species accounts for California condor, Mexican spotted owl, southwestern willow flycatcher, yellow-billed cuckoo, Jones cycladenia, Brady’s pincushion cactus, and Siler pincushion cactus.

INDICATORS FOR MONITORING AND MANAGEMENT ACTIONS

RESOURCE OR VALUE	POTENTIAL INDICATOR(S)	WHAT DOES IT POTENTIALLY INDICATE / WHAT IS THE CAUSE FOR CONCERN?	POTENTIAL MANAGEMENT ACTIONS
Soils	Tire tracks outside designated use areas or off-road	Areas designated for off-road use may be poorly defined and identified. Changes in soil structure due to crushing and shearing affect ecological processes and functions, cause erosion, crush burrows and impact ground-dwelling and burrowing animals, affect vegetation, and can lead to increases in invasive plants.	Improved signs and communication/education with partners and users; physical barriers; enhanced NPS presence; restoration of native plants; and closures.
Vegetation (including threatened and endangered vegetation)	Crushing or other damage to native plants	Areas designated for off-road use may be poorly defined or identified. Impacts on plants can lead to losses in productivity, increases in impacts on soils, loss of habitat for wildlife, and increased susceptibility to invasive plants.	Improved signs and communication/education with partners and users; physical barriers; enhanced NPS presence; restoration of native plants; closures; and additional restrictions on vehicle type or other alterations to use.
Safety	Motor vehicle accidents / personal injury	These incidents can indicate unsafe operator behavior and/or unsafe operating conditions or poor site design.	Improved signs and communication/education with partners and users; traffic requirements such as speed limit changes; and additional closures.
Soundscapes	Increasing levels of sound or incidents of exceeding sound limits	Exceeding sound limits set for motor vehicles could negatively impact natural soundscapes and wilderness character.	Improved signs and communication with partners and users; enhanced NPS presence; increase in equipment compliance checks.
Recreation Resources and Visitor Experience	Litter / sanitation / vandalism / evidence of vehicle maintenance / evidence of hazardous materials	These indicate site degradation and ineffective communication of rules or problems with user behavior.	Improved signs and communication/education with partners and users and enhanced NPS presence; and closures.

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RESOURCE OR VALUE	POTENTIAL INDICATOR(S)	WHAT DOES IT POTENTIALLY INDICATE / WHAT IS THE CAUSE FOR CONCERN?	POTENTIAL MANAGEMENT ACTIONS
	Conflict	Conflict indicates crowding, inappropriate forms of use or user behavior, degraded conditions, impacts on soundscapes, or similar issues.	Improved signs and communication/education with partners and users; physical barriers; enhanced NPS presence; and closures.
	Expansion of ORV areas and routes	The expansion of designated ORV routes and areas indicates inappropriate forms of use, poor site design, or problems with user behavior.	Improved signs and communication/education with partners and users; physical barriers; enhanced NPS presence; restoration of native plants; and closures.
	User-created routes	The creation of illegal user-created routes indicates inappropriate user behavior, poor site design, ineffective enforcement, and degradation of resources.	Improved signs and communication/education with partners and users; physical barriers; enhanced NPS presence; restoration of native plants; and closures.
	Air quality and visual impacts	Impacts on air quality and visual resources could indicate increased dust at certain times of the year, such as spring and early summer.	Photographic monitoring using permanent photo points may require changes including closures at certain times of year or certain routes.
Cultural Resources	Evidence of site disturbance, vandalism / evidence of visitation to areas near ORV routes and areas	Archeological resources are at risk due to inappropriate user behavior, poor site selection, or intentional disturbance of archeological sites.	Monitoring efforts at National Register-eligible sites; reduction of use during particular times of the year and/or at specific locations based on surface conditions; relocation of road segments that are threatening or causing resource damages; improved signs and communication/education with partners and users; physical barriers; enhanced NPS presence; closures; and data recovery. Additional site-specific treatments could include repairs, rehabilitation, or other preservation treatments to historic fabric to stabilize resources that have been damaged or are threatened by damage; and revegetation and drainage control to stabilize the resource-supporting sediment matrix that is damaged or threatened by damage.

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RESOURCE OR VALUE	POTENTIAL INDICATOR(S)	WHAT DOES IT POTENTIALLY INDICATE / WHAT IS THE CAUSE FOR CONCERN?	POTENTIAL MANAGEMENT ACTIONS
Paleontological Resources	Evidence of site disturbance, vandalism / evidence of visitation to areas near ORV routes and areas	Paleontological resources are at risk due to inappropriate user behavior, poor site selection, or intentional disturbance of paleontological sites.	Improved signs and communication/education with partners and users; physical barriers; enhanced NPS presence; and inventories, monitoring, and either closing the shoreline and/or removing the artifacts if they are uncovered, depending on the fossil or the type of paleontological site resource.
Invasive Plants	Increase in invasive plants	Increases in invasive plants may indicate disturbance to soils or native vegetation, changes in resource conditions, or transport of seeds by off-road use.	Improved signs and communication/education with partners and users; physical barriers; enhanced NPS presence, restoration of native plants; closures; and additional restrictions on vehicle type or other alterations to use.
Special-status Species	Declines in special-status species through evidence of direct mortality (animals) or declines in abundance (plants)	Declines of special-status species along roads may be linked to increased mortality (direct collisions, dust emissions, etc.), indicating disturbance and impacts caused by increased off-road use.	Develop monitoring plans for species that survey data suggest may be affected; use education, physical barriers, enhanced NPS presence, or closures. Closure or seasonal closure for lambing areas for Desert Bighorn Sheep at Ferry Swale.
Compliance	Number of incidents	Poor compliance may be due to poor site design or selection, or insufficient monitoring or enforcement.	Improved signs and communication/education with partners and users; physical barriers; enhanced NPS presence; and closures.

Conservation Measures

The NPS has designed a variety of conservation measures in the project to protect federally listed species and their habitats. The following design criteria are intended to avoid or minimize potential for adverse impacts. These measures will be carried out by trained Glen Canyon staff and project personnel using applicable U.S. Fish and Wildlife Service (USFWS) protocols. In addition, education will be an important component of these measures for all species.

CALIFORNIA CONDOR

- Glen Canyon staff will communicate and cooperate with the Peregrine Fund and state wildlife agencies as these organizations monitor condor locations and movements to determine the locations and status of condors in the plan area.
- Park staff and visitors are instructed to avoid interaction with condors and to immediately contact Glen Canyon Division of Resource Management staff at (928-608-6267) and the Peregrine Fund (208-362-3716) if and when condor(s) occur in the plan area.
- Permits issued for off-road vehicle use will include information about the condor and applicable restrictions.
- The speed limit on accessible shoreline ORV areas will be lowered to 25 mph or lower to decrease the possibility of collisions.
- If condors consistently occur in a portion of the plan area the NPS will consult with USFWS to determine if additional conservation measures are necessary. Glen Canyon staff will report condor occurrence in the plan area to the USFWS in a timely manner, and will facilitate implementation of any necessary management actions by Glen Canyon in consultation with the USFWS.
- Condor nesting in the vicinity of the action area is unlikely. However, if condor nesting activity occurs within 1.0 mile of the project area additional conservation measures may be necessary. Glen Canyon will report any such occurrences to the USFWS in a timely manner, and will facilitate implementation of any necessary management actions by Glen Canyon in consultation with the USFWS. Temporary closures to recreational use of affected areas would be put in place if condor nesting activity occurs in the area.
- The NPS will provide visitor education via permit and other outreach efforts regarding proper and legal behaviors to protect natural and cultural resources when recreating on GMP roads, and on ORV routes and within ORV areas. This will include information about the importance of the area as habitat for a variety of sensitive species, including Mexican spotted owl, western yellow-billed cuckoo, southwestern willow flycatcher, the California condor, Jones cycladenia, Siler pincushion cactus, and Brady's pincushion cactus.
- All trash related to park maintenance and visitor activities will be removed and be properly disposed of in a timely manner.

MEXICAN SPOTTED OWL

- The following measures apply to known nesting sites and activity centers within 0.5 mile of the action area during the MSO breeding season (1 Mar - 31 Aug):
 - During the MSO breeding season (1 Mar – 31 Aug), NPS will implement a 0.5 mile vehicle buffer around occupied activity centers, nest sites or occupied roost

sites to provide adequate protection against disturbance of roosting or nesting owls.

- Ensure that no construction of new facilities (e.g., fencing, signage) occurs during the breeding season in suitable or designated critical habitat.
- When implementing activities related to maintenance of existing facilities pertaining to public health, safety, and routine maintenance, such as road repairs following storm events, use all measures possible to avoid potential effects to owls and their designated critical or suitable habitat (e.g., use least disruptive machinery, time activity to minimize disturbance, modify type of equipment used, conduct work in non-breeding season).
- Where designated critical habitat and modeled suitable nesting habitat overlaps the action area, and owl surveys are not current, NPS will implement seasonal closures (March 1 – August 31) of activities proposed in the Plan until survey data can be collected to determine use by Mexican spotted owl.
- NPS will institute additional USFWS protocol surveys for owls in 2017 for a minimum of three consecutive years through 2019 in modeled suitable nesting habitat. Areas of modeled suitable nesting habitat shall be prioritized for surveys based on a) overlap with the action area and a 0.5 mile buffer; and b) ground-truthing of modeled suitable nesting habitat;
- If new owl presence is detected, NPS will immediately modify ORV areas and routes in such a manner that off-road activity is restricted to areas >0.5 miles from known or suspected owl nesting sites. In the unlikely event that a temporary closure is not possible, the NPS will engage in additional consultation with USFWS to identify appropriate mitigation measures.
- NPS will report positive detections for MSO to the Utah Field Office of the USFWS within 3 days of detection.
- Annual reports of survey results shall be submitted to the Utah Field Office by September 30 of each year.
- NPS will develop a long-term monitoring strategy for Mexican spotted owl in coordination with USFWS to further guide implementation of the ORV Management Plan. This includes monitoring of suitable habitat in or near existing GMP roads, ORV areas and routes to inform subsequent management actions (e.g. change in size or location of designated ORV areas, modification of park operations or visitor use activities).
- NPS will discontinue off-road use at the existing Warm Creek ORV area due to a range of management objectives. This closure will eliminate potential for disturbance from motorized vehicular access to adjacent suitable habitat for the Mexican spotted owl.

- The NPS will provide visitor education via permit and other outreach efforts regarding proper and legal behaviors to protect natural and cultural resources when recreating on GMP roads, and on ORV routes and within ORV areas. This will include information about the importance of the area as habitat for a variety of sensitive species, including Mexican spotted owl, western yellow-billed cuckoo, southwestern willow flycatcher, the California condor, Jones cycladenia, Siler pincushion cactus, and Brady's pincushion cactus.
- NPS will lower the speed limit to 25 mph or less on unpaved GMP roads where street-legal ATVs and OHVs are permitted to decrease the possibility of collisions with wildlife, including sensitive species.
- Current accessible shorelines that are closed (Bullfrog North and South, White Canyon) due to low lake levels will remain closed until MSO surveys are completed.

SOUTHWESTERN WILLOW FLYCATCHER

- Glen Canyon staff will survey using USFWS protocols along accessible shorelines and any associated riparian zones where riparian vegetation may occur that could be used during migration and breeding to determine the locations and status of flycatchers in the plan area. Evidence for southwestern willow flycatchers will consist of presence during three or more survey times between 15 May and 17 July, and will be conducted in consecutive years from 2017 through 2019, with periodic surveys afterwards using USFWS protocols.
- NPS will develop a long-term monitoring strategy in coordination with USFWS to further guide implementation of the plan. This includes monitoring of suitable habitat in or near existing GMP roads, ORV areas and routes to inform subsequent management actions (e.g. change in size or location of designated ORV areas, modification of park operations or visitor use activities).
- The speed limit on ORV routes and accessible shorelines ORV areas will be lowered to 25 mph or less to decrease the possibility of collisions.
- The NPS will provide visitor education via permit and other outreach efforts regarding proper and legal behaviors to protect natural and cultural resources when recreating on GMP roads, and on ORV routes and within ORV areas. This will include information about the importance of the area as habitat for a variety of sensitive species, including Mexican spotted owl, western yellow-billed cuckoo, southwestern willow flycatcher, the California condor, Jones cycladenia, Siler pincushion cactus, and Brady's pincushion cactus.
- NPS will report consistent southwestern willow flycatcher occurrence in the plan area to the USFWS in a timely manner and will facilitate implementation of any necessary changes to management actions in consultation with the USFWS.

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- Temporary closures to recreational use of affected areas will be put in place if activity occurs within 0.5 miles of nesting areas during the breeding season (May to August).
- When implementing activities related to modification or maintenance of existing facilities pertaining to public health, safety, and routine maintenance, use all measures possible to avoid potential effects to flycatchers and their suitable habitat (e.g., use least disruptive machinery, time activity to minimize disturbance, modify type of equipment used, and conducting work in non-breeding season).
- Flycatcher nesting is extremely unlikely within the plan area due to the absence of high quality habitat within the plan area. However, if nesting activity occurs within 0.5 mile of the action area, most likely at or near accessible shoreline ORV areas, additional conservation measures will be implemented in consultation with USFWS. This includes temporary closures to recreational use within 0.5 miles of any active nest sites or regularly used foraging areas during the breeding season.
- NPS will develop a long-term monitoring strategy for southwestern willow flycatcher in coordination with USFWS to further guide implementation of the ORV Management Plan. This includes monitoring of suitable habitat in or near existing GMP roads, ORV areas and routes to inform subsequent management actions (e.g. change in size or location of designated ORV areas, modification of park operations or visitor use activities).

YELLOW-BILLED CUCKOO

- Prior to the implementation of this Plan, Glen Canyon staff will identify suitable nesting habitat for cuckoo within a 0.5 mile of the action area using the Service's 2015 Guidelines for the identification of suitable habitat for WYBCU in Utah.
- Protocol-level surveys for cuckoo will be conducted in consecutive years from 2017 to 2019, with periodic surveys in following years.
- Where suitable nesting habitat for cuckoo overlaps the action area, NPS will implement temporary closures (June 1 – August 31) to recreational use within 0.5 mile of that habitat. If protocol-level surveys determine absence of nesting cuckoo, temporary closures may cease.
- If protocol-level surveys indicate presence of nesting cuckoos, seasonal closures will be implemented for recreational use within 0.5 mile of the habitat patch where cuckoo activity has been documented and where nesting is likely.
- NPS will develop a long-term monitoring strategy in coordination with USFWS to further guide implementation of the plan. This includes monitoring of suitable and designated critical habitat in or near existing GMP roads, ORV areas and routes to inform subsequent management actions (e.g. change in size or location of designated ORV areas, modification of park operations or visitor use activities).

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- The speed limit on unpaved roads and accessible shorelines where street-legal ATVs and OHVs are permitted will be lowered to 25 mph or lower to decrease the possibility of collisions.
- The NPS will provide visitor education via permit and other outreach efforts regarding proper and legal behaviors to protect natural and cultural resources when recreating on GMP roads, and on ORV routes and within ORV areas. This will include information about the importance of the area as habitat for a variety of sensitive species, including Mexican spotted owl, western yellow-billed cuckoo, southwestern willow flycatcher, the California condor, Jones cycladenia, Siler pincushion cactus, and Brady's pincushion cactus.
- NPS will follow all USFWS reporting requirements if cuckoos are detected, including detections within 24 hours as well as annual reporting by September 30.
- When implementing activities related to modification or maintenance of existing facilities pertaining to public health, safety, and routine maintenance, use all measures possible to avoid potential effects to cuckoos and their designated critical or suitable habitat (e.g., use least disruptive machinery, time activity to minimize disturbance, modify type of equipment used, and conducting work in non-breeding season).
- Yellow-billed cuckoo nesting in the vicinity of the plan area is unlikely due to the absence of high quality nesting habitat. However, if nesting activity occurs within 0.5 mile of the plan area, additional conservation measures will be implemented in consultation with USFWS. This includes temporary closures to recreational use within 0.5 miles of a habitat patch where cuckoos are nesting.

JONES CYCLADENIA

- Glen Canyon staff will continue to survey suitable habitat at accessible shorelines for the species prior to project implementation using survey protocols recommended by the USFWS. If populations are found they will be protected by closures or barriers to prevent vehicle access. A 300-foot minimum buffer will be established using closures and barriers around located plants.
- Any plan activity that may cause adverse effect to located populations and plants will cease until qualified personnel can assess the situation and determine the correct course of action in consultation with the USFWS.
- The NPS will provide visitor education via permit and other outreach efforts regarding proper and legal behaviors to protect natural and cultural resources when recreating on GMP roads, and on ORV routes and within ORV areas. This will include information about the importance of the area as habitat for a variety of sensitive species, including Mexican spotted owl, western yellow-billed cuckoo, southwestern willow flycatcher, the California condor, Jones cycladenia, Siler pincushion cactus, and Brady's pincushion cactus.

BRADY PINCUSHION CACTUS

- No plan activities or projects will be authorized in suitable or occupied habitat for this species.
- NPS will develop a long-term monitoring strategy in coordination with USFWS to further guide implementation of the plan. This includes monitoring of suitable habitat in or near existing GMP roads, ORV areas and routes to inform subsequent management actions (e.g. change in size or location of designated ORV areas, modification of park operations or visitor use activities).
- Glen Canyon staff will monitor the Lees Ferry paved road regularly to prevent illegal off-road activity. This road and the Lees Ferry District will be closed to ORV activity.
- The NPS will provide visitor education via permit and other outreach efforts regarding proper and legal behaviors to protect natural and cultural resources when recreating on GMP roads, and on ORV routes and within ORV areas. This will include information about the importance of the area as habitat for a variety of sensitive species, including Mexican spotted owl, western yellow-billed cuckoo, southwestern willow flycatcher, the California condor, Jones cycladenia, Siler pincushion cactus, and Brady's pincushion cactus.

SILER PINCUSHION CACTUS

- Glen Canyon staff will continue to survey suitable habitat at accessible shorelines for the species prior to project implementation. If populations are found they will be protected by closures or barriers to prevent vehicle access. A 300-foot minimum buffer will be established using closures and barriers around located plants.
- Any project activity that may cause adverse effects to located populations and plants will cease until qualified personnel can assess the situation and determine the correct course of action in consultation with the USFWS.

ATTACHMENT C

ERRATA

These errata are to be attached to the Glen Canyon Off Road Vehicle Management Plan EIS dated January 2017, and serve as text corrections or additions to clarify the content of the EIS. Text has either been re-written, or minor changes are identified using “strikethrough” showing removed text and bold type font showing added text.

Chapter 3, Soundscapes, 2007 Glen Canyon Off-road Vehicle Sound Study, Page 141: Because the ORV area where the sound study took place is completely open, ORV distances from the sound monitoring equipment are actually unknown, and it is possible that the assumed 89 foot reference distance for adjustment of ORV noise levels to 50 feet is in error. As a result of the measurement report uncertainties, the values associated with the 50 foot predictions will be removed from this section, and only known report data will be referenced.

Page 140, Paragraph 2 - the first sentence is changed to "This study found that sound levels at the Lone Rock Beach Play Area regularly exceeded 75 dBA and occasionally exceeded 90 dBA (Ambrose and Florian 2008).

Page 141, Paragraph 2: ~~"The loudest events at monitoring sites GLCA005 and GLCA006 were calculated, using measured data, for a standard reference distance of 50 feet and presented in the ORV study report (Ambrose and Florian 2008). The loudest events at GLCA005 were most frequently attributed to ORVs (up to 101.6 dBA at 50 feet). In contrast, the loudest events at GLCA006 were attributed to motor boats (up to 102.8 dBA at 50 feet)."~~ Replace with: "The loudest events at monitoring sites GLCA005 and GLCA006 were presented in the ORV study report (Ambrose and Florian 2008). The loudest events at GLCA005 were attributed to thunder (101.9 dBA) and ORVs (up to 97.0 dBA). In contrast, the loudest events at GLCA006 were attributed to thunder (87.0 dBA) and motor boats (up to 80.5 dBA).

Chapter 4, Wildlife and Wildlife Habitat, Page 271 and Soundscapes, Pages 319-321: As stated in ANSI S12.9, Annex A.1.3, it is impossible to determine the degree of masking from A-weighted sound levels because sounds with similar A-weighted sound levels may have quite different spectral content. Listening area is an important concept for showing impacts to hearing opportunities due to masking. A masking analysis should be based on sound pressure levels in specific frequency bands. To ensure that the relationship between sound pressure, detection thresholds, and masking is presented correctly (according to ANSI S1.1 and ANSI S12.9-2005/Part 4) and to bolster the 3-dB impact rationale (ANSI S12.9-2005/Part 4, Annex A.1.3.) the following text changes have been made:

Page 271, Paragraph 1: ~~"In terms of impact metrics, a 3 A-weighted decibels (dBA) a~~ **sound pressure level (SPL) of 3 decibels (dB)** increase above the natural ambient sound level is an important indicator of potential ambient sound conditions..."

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Page 319, Paragraph 1: "In terms of impact metrics, a ~~3-dBA increase~~ **a 3 dB SPL increase** above the natural ambient sound level is an important indicator of potential impact..."

Page 319, Table 29 Top Left Cell: "~~dBA Ambient Increase~~" "**Background SPL Increase (dB)**"

Page 320, Paragraph 2: "If a noise such as a conventional or non-conventional motor vehicle increases ~~ambient sound level by 6 dBA~~ **background SPL by 6 dB**, the distance at which the flood could be detected would decrease..."

Page 321, Paragraph 2: "~~A 3-dBA increase~~" **A 3 dB SPL increase** is important because it results in a 50% reduction in listening area for humans and wildlife..."