

UNITED STATES DEPARTMENT OF THE INTERIOR – NATIONAL PARK SERVICE

OFF-ROAD VEHICLE MANAGEMENT PLAN /
DRAFT ENVIRONMENTAL IMPACT STATEMENT

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

This *Off-Road Vehicle Management Plan / Environmental Impact Statement* (plan/DEIS) describes five alternatives for managing off-road use and on-road use of off-highway vehicles (OHVs) and street-legal all-terrain vehicles (ATVs) and assesses the impacts that could result from continuing current management (the no-action alternative) or implementation of any of the action alternatives.

The purpose of this plan/DEIS is to evaluate off-road use by conventional and non-conventional motor vehicles and on-road use by non-conventional motor vehicles and to 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. Therefore, a plan is needed for the following reasons:

- To evaluate the impacts associated with allowed but unauthorized off-road use in Glen Canyon and determine what management action should be taken.
- To determine whether NPS will authorize off-road use in accordance with Executive Orders 11644 and 11989 (off-road vehicles (ORVs) 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.

Under alternative A, the no-action alternative, there would be a continuation of existing management policies and actions related to the use of ORVs in Glen Canyon. This alternative represents no change from the current level of management direction and level of management intensity. This alternative is consistent with the 1979 Glen Canyon General Management Plan, 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.

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 is 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.

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. The isolated and primitive characteristics of the Glen Canyon backcountry would be enhanced by limiting the 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.

Under alternative E, the preferred alternative, resources would be protected and the visitor experience enhanced 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.

The potential environmental consequences of the alternatives were addressed for geology and soils, vegetation, wildlife and wildlife habitat, special-status species, soundscapes, visitor use and experience, archeological and ethnographic resources, socioeconomics, health and safety, paleontological resources, and wilderness.

The *Off-Road Vehicle Management Plan / Draft Environmental Impact Statement* is available for public and agency review and comment beginning when the U.S. Environmental Protection Agency's Notice of Availability is published in the Federal Register. If you wish to comment on the document, you may mail comments to the name and address listed below or you may post your comments electronically at <http://parkplanning.nps.gov/GLCA>. Before including your address, telephone number, electronic mail address, or other personal identifying information in your comments, you should be aware that your entire comment (including your personal identifying information) may be made publicly available at any time. While you can ask us in your comments to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. After public review, this document will be revised in response to public comments. A final version of this document will then be released, and a 30-day no-action period will follow. Following the 30-day period, the alternative or actions constituting the approved plan will be documented in a record of decision that will be signed by the Regional Director of the Intermountain Region. For further information regarding this document, please contact:

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National Park Service
U.S. Department of the Interior

Glen Canyon National Recreation Area
Arizona and Utah



Glen Canyon National Recreation Area

Off-road Vehicle Management Plan / Draft Environmental Impact Statement

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EXECUTIVE SUMMARY

This *Glen Canyon National Recreation Area Off-road Vehicle Management Plan / Draft Environmental Impact Statement* (plan/DEIS) analyzes a range of alternatives and actions for managing off-road use of motor vehicles and on-road use of off-highway vehicles (OHVs) and street-legal all-terrain vehicles (ATVs) at Glen Canyon National Recreation Area (Glen Canyon). The plan/DEIS assesses the impacts that could result from continuing current management (the no-action alternative) or implementing any of the four action alternatives.

Upon conclusion of this plan and decision-making process, the alternative selected for implementation will become the Off-road Vehicle (ORV) Management Plan and form the basis for a special regulation to manage any approved off-road use at Glen Canyon. The plan/DEIS would guide management of off-road use at Glen Canyon for the next 10 to 15 years.

BACKGROUND

Glen Canyon encompasses 1,254,306 acres in northern Arizona and southeastern Utah. Glen Canyon includes portions of Garfield, Kane, San Juan, and Wayne Counties in Utah and Coconino County in Arizona. The southern boundary runs contiguous to the lands of the Navajo Nation. Glen Canyon shares boundaries with other national park system units, including Grand Canyon National Park, Capitol Reef National Park, and Canyonlands National Park. Glen Canyon also encompasses Rainbow Bridge National Monument. Glen Canyon adjoins approximately 9.3 million acres of other 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.

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 1981 proposing 588,855 acres for designation as wilderness within Glen Canyon.

Conventional Motor Vehicle: A motor vehicle designed primarily for use and operation on streets and highways and is licensed and registered for interstate travel but can be used off-road.

ORV: National Park Service (NPS) defines ORVs broadly as a motorized vehicle (conventional or non-conventional) designed for or capable of cross-country travel on or immediately over natural terrain.

OHV: State law defines these as a non-conventional motor vehicle designed primarily for off-road use.

Street-legal ATV: An ATV that qualifies under the state's motor vehicle and traffic code to be operated on state roads and highways.

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 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 the Lake Powell at this location. In addition, the 2006 Uplake Development Concept Plan 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 in federal court over the failure to comply with the executive orders 11644 and 11989 and 36 CFR 4.10(b). Although NPS had implemented ORV management plans for various parts of Glen Canyon in 1981 (Lone Rock Beach) and 1988 (20 accessible shoreline areas on Lake Powell), past planning efforts failed to comply with the CFR requiring promulgation of a special regulation to designate off-road use areas.

Glen Canyon is preparing this plan/DEIS under the terms of the May 12, 2008, settlement agreement between Friends of the Earth, the National Parks Conservation Association, and Wildlands CPR (known collectively as Bluewater Network) and the Department of the Interior and NPS (*Friends of the Earth, Bluewater Network Division, et al. v. United States Department of the Interior, et al.* [Case 1:05-cv-02302-RCL]).

This plan/DEIS 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 OHVs and street-legal ATVs. This plan/DEIS also evaluates the designation of ORV routes in other areas of Glen Canyon such as at Ferry Swale near Page, AZ. Lastly, this plan/DEIS evaluates the use of OHVs and street-legal ATVs on GMP roads in Glen Canyon.

PURPOSE OF THIS PLAN

The purpose of this plan/DEIS 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/DEIS is needed for the following reasons:

- To evaluate the impacts associated with allowed but unauthorized off-road use in Glen Canyon and determine what management action should be taken.
- To determine whether NPS will authorize off-road use in accordance with Executive Orders 11644 and 11989 ORVs 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.

This plan/DEIS has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500–1508), and NPS Director’s Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-Making*.

OBJECTIVES IN TAKING ACTION

The objectives for managing off-road and on-road use of motor vehicles are based on Glen Canyon’s enabling legislation and prior planning documents and are compatible with NPS mission and policy guidance. All alternatives considered in this ORV management plan must, to a large degree, accomplish the following objectives:

- Manage authorized vehicle uses to provide safe and healthful opportunities for visitor access and recreation.
- Manage authorized vehicle uses to protect the biological and physical environment, including natural processes and systems.
- Manage authorized vehicle uses to protect cultural resources.
- Establish clear policies to guide authorized vehicle uses.

ISSUES AND IMPACT TOPICS

Glen Canyon staff identified issues associated with implementing an ORV management plan during internal scoping meetings and the public identified issues during the public scoping process at three public meetings. Table ES-1 details the issues that are discussed and analyzed in the plan/DEIS.

TABLE ES-1: ISSUES AND IMPACT TOPICS

ISSUE	REASON FOR ANALYSIS
Geology and Soils	Damage to soils from off-road use includes the destruction of soil stabilizers, 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. Cyanobacterial soil crusts stabilize soils, increase water infiltration, and concentrate essential nutrients for vascular plant growth. Damage to these living soil crusts can occur with a single pass of a vehicle.
Vegetation	Off-road use can adversely impact native plants and plant communities directly, by crushing and uprooting of plants, and indirectly, by altering soil properties and by serving as a vector for invasive plant species that replace native vegetation.
Wildlife and Wildlife Habitat	Wildlife is known to be affected by off-road motor vehicle use. Impacts occur in four primary categories: direct mortality, disturbance, noise, and habitat alteration. The most vulnerable species to off-road activity include burrowing species, such as rodents that nest in open sandy sites and whose burrows are easily crushed.

ISSUE	REASON FOR ANALYSIS
Special-status Species	A number of federally listed species are likely to occur in the project area and may be affected by management actions. Because this plan/DEIS 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]).
Soundscapes	The natural soundscape is considered a resource, and qualifies as an inherent component of “the scenery and the natural and historic objects and the wild life therein” that is protected by the NPS Organic Act. Vehicular noise has the potential to impact other users in these areas. Motor vehicle noise could also discourage wildlife from using these areas or directly impact their ability to hear.
Visitor Use and Experience	The use of motorized vehicles is an integral component of the experience for some visitors and the extent to which this use may be authorized in Glen Canyon could impact the amount and range of recreational opportunities accessible to visitors, especially if certain restrictions or user fees are involved. While off-road use may provide a positive experience for some visitors, this can also conflict with the experiences sought by others.
Cultural Resources	Off-road use has been demonstrated to be a source of direct and indirect damage to cultural resources. Due to the potential for adverse impacts on archeological and ethnographic resources through the adoption of one or more of the action alternatives, these two resources have been assessed for their potential to be affected by the alternatives.
Archeological Resources	Glen Canyon is known to contain archeological resources eligible for inclusion in the National Register of Historic Places; archeological resources do exist in the study area.
Ethnographic Resources	Ethnographic resources that are archeological sites have been documented in association with the accessible lakeshores and within Lone Rock Beach Play Area. Archeological sites have been recorded within and adjacent to the GMP roads. Some of these sites may also be ethnographic resources. One traditional cultural property (TCP) is located within the study area and the Hole-in-the-Rock Road corridor may also meet the criteria for a TCP.
Socioeconomics	The alternatives associated with the management of ORVs at Glen Canyon could have an impact on the socioeconomic environment of the recreation area and the region, including a greater demand for recreation and tourism-related amenities, the potential for increased profitability of commercial services in the area, and the enhancement of local economies.
Health and Safety	NPS recognizes that both the Glen Canyon National Recreation Area resources which attract visitors and some of the specific recreational activities in which visitors participate can present sources of potential hazards. Off-road use is of particular concern regarding visitor health and safety. ATVs in particular have been the subject of actions by the Consumer Product Safety Commission.
Paleontological Resources	All sedimentary rock formations in Glen Canyon hold the potential for fossil discovery. Certain formations are more sensitive than others and warrant special management concern. Some formations contain dinosaur tracks and traces and are targets for illegal collection and trade in the black market.
Wilderness	Approximately 588,855 acres (47%) of Glen Canyon have been proposed for addition to the National Wilderness Preservation System and an additional 48,955 (4%) are identified as potential wilderness. The general policy of NPS is to manage all lands with wilderness characteristics so as not to diminish the wilderness eligibility of these areas.

ALTERNATIVES

NPS held seven meetings to inform the public about the preliminary alternatives for the plan/DEIS. The alternatives analyzed in this document are the result of internal and public scoping. 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 of 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. The elements of all five alternatives, including the no-action alternative, are summarized in table ES-2.

ELEMENTS COMMON TO ALL ALTERNATIVES

The following management actions are common to all alternatives, including the no-action alternative. NPS will implement these actions upon adoption of the final Record of Decision (ROD) regardless of which alternative is selected. Additional details of each element can be found in the plan/DEIS.

- **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 unless designated.
- **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.
- **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.
- **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 this plan/DEIS. Title 36 CFR 4.2 allows NPS to adopt non-conflicting state laws.

ELEMENTS COMMON TO ALL ACTION ALTERNATIVES (ALTERNATIVES B, C, D, AND E)

The following management actions are common to all action alternatives. NPS would implement these actions upon adoption of the final ROD and subsequent regulation if one of the four action alternatives were selected. Additional details of each element can be found in the plan/DEIS.

- **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 would 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 would be developed that would include partnerships, web site development, partnerships and informational brochures.
- **Closing Undesignated ORV Routes and Areas and Restoring Them to Natural Conditions:** NPS would 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 occurred.

MEASURES TO MONITOR, AVOID, MINIMIZE, OR MITIGATE OFF-ROAD MOTOR VEHICLE IMPACTS UNDER ALTERNATIVES C, D, AND E

NPS developed management and mitigation strategies to address the impacts from off-road use as proposed in this plan/DEIS. 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.

ORV FEE PERMIT SYSTEM

- Permits would be used to recover NPS costs for managing areas designated for off-road use. Costs include monitoring, signs, education programs, and partnerships, as well as the administrative costs associated with administering the permit system.
- Permits would have an educational component to further reduce visitor use conflicts, prevent resource damage and provide for visitor safety.
- Permits would be required for all off-road travel at accessible shoreline areas, Lone Rock Beach, Lone Rock Beach Play Area, and designated ORV routes in Ferry Swale.
- Permits would be available at designated permit issuing stations and by mail.
- Permits could be revoked for violation of applicable Glen Canyon regulations or terms and conditions of the permit.

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 is 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 the 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.

ALTERNATIVE E: MIXED USE (NPS PREFERRED 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.

ENVIRONMENTAL CONSEQUENCES

Impacts of the alternatives were assessed in accordance with Director's Order 12 in terms of their context, duration, and intensity. The analysis provides the public and decision-makers with an understanding of the implications of ORV management actions in the short and long term, cumulatively, and within context, based on an understanding and interpretation by resource professionals and specialists.

For each impact topic, methods were identified to assess the change in Glen Canyon National Recreation Area resources that would occur with the implementation of each management alternative. Each management alternative was compared to baseline conditions (Alternative A: No Action) to determine the context, duration, and intensity of resource impacts.

Table ES-3 summarizes the results of the impact analysis for the impact topics that were assessed. The full impact analysis is in "Chapter 4: Environmental Consequences." For all of the alternatives in this plan/DEIS, impacts from operations in the Glen Canyon National Recreation Area would be mitigated to avoid impairment of Glen Canyon National Recreation Area resources and values.

TABLE ES-2. ALTERNATIVE ELEMENTS OVERVIEW

	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: NO OFF-ROAD USE	ALTERNATIVE C: INCREASED MOTORIZED ACCESS	ALTERNATIVE D: DECREASED MOTORIZED ACCESS	ALTERNATIVE E: MIXED USE (NPS PREFERRED ALTERNATIVE)
Highlights	<p>Off-road use would continue at 15 designated ORV areas.</p> <p>Street-legal ATVs would be authorized for use on GMP roads.</p> <p>No OHVs or street-legal ATVs would be allowed within the Orange Cliffs Special Management Unit (Orange Cliffs Unit).</p> <p>Approximately 53 miles of ORV routes would be designated.</p>	<p>No ORV areas would be designated.</p> <p>Street-legal ATVs would be authorized for use on designated GMP roads.</p> <p>No OHVs or street-legal ATVs would be allowed within the Orange Cliffs Unit.</p> <p>No ORV routes would be designated.</p>	<p>Conventional motor vehicles, OHVs, and street-legal ATVs would be authorized for use at 17 designated ORV areas only by permit, subject to water level closures.</p> <p>OHVs and street-legal ATVs would be authorized for use on all GMP roads to include the Orange Cliffs Unit.</p> <p>Fifteen miles of ORV routes would be designated.</p>	<p>Conventional motor vehicles would be authorized for use at five designated ORV areas (Lone Rock Beach, Hite Boat Ramp, Farley Canyon, Dirty Devil, and Stanton Creek), only by permit, subject to water level closures.</p> <p>No OHVs or street-legal ATVs would be authorized for use in Glen Canyon.</p> <p>No ORV routes would be designated.</p>	<p>Conventional motor vehicles and street-legal ATVs would be authorized for use at 16 areas only by permit, subject to water-level closures.</p> <p>A vehicle-free area would be designated at Lone Rock Beach.</p> <p>Street-legal ATVs would be authorized for use on paved GMP roads. OHVs and street-legal ATVs would also be authorized for use on unpaved GMP roads. No OHVs or street-legal ATVs would be authorized for use in the Orange Cliffs Unit.</p> <p>Fifteen miles of ORV routes would be designated.</p>
Lone Rock Beach	<p>Off-road use by conventional motor vehicles, OHVs, and street-legal ATVs would continue. Utah rules regulating OHVs and street-legal ATVs would remain in effect.</p>	<p>Off-road use by all vehicles would be discontinued and the area would be restored to natural conditions.</p>	<p>Same as alternative A, with additional requirement for an ORV permit.</p>	<p>Off-road use by conventional motor vehicles would be authorized only by permit. No OHVs or street-legal ATVs would be allowed.</p>	<p>Same as alternative C except approximately 20 acres of the beach would be designated as a vehicle-free zone (no vehicles of any type would be allowed in this zone).</p>
Lone Rock Beach Play Area	<p>Off-road use by conventional motor vehicles, OHVs, and street-legal ATVs would continue. Utah rules regulating OHVs and street-legal ATVs would remain in effect.</p>	<p>Off-road use by all vehicles would be discontinued and the area would be restored to natural conditions.</p>	<p>Same as alternative A, with additional requirement for an ORV permit and safety flag.</p>	<p>Same as alternative B.</p>	<p>Same as alternative C.</p>

	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: NO OFF-ROAD USE	ALTERNATIVE C: INCREASED MOTORIZED ACCESS	ALTERNATIVE D: DECREASED MOTORIZED ACCESS	ALTERNATIVE E: MIXED USE (NPS PREFERRED ALTERNATIVE)
Accessible Shoreline Areas	Off-road use by conventional vehicles only would continue at 13 existing areas (Blue Notch, Bullfrog North and South, Copper Canyon, Crosby Canyon, Dirty Devil, Farley Canyon, Neskahi, Paiute Canyon, Red Canyon, Stanton Creek, Warm Creek, White Canyon, and Hite Boat Ramp), subject to water-level closures.	Off-road use at 15 areas (13 existing areas plus Nokai Canyon and Paiute Farms) would be discontinued and these areas would be restored to natural conditions.	Fifteen areas (13 existing areas plus Nokai Canyon and Paiute Farms) would be authorized for use by conventional motor vehicles, OHVs, and street-legal ATVs, only by permit, subject to water-level closures.	Four areas (Dirty Devil, Farley Canyon, Hite Boat Ramp, and Stanton Creek) would be authorized for use only by conventional motor vehicles, only by permit, subject to water-level closures. Off-road use at eleven areas would be discontinued.	Fourteen areas (12 existing areas plus Nokai Canyon and Paiute Farms) would be authorized for use by conventional motor vehicles and street-legal ATVs, only by permit, subject to water-level closures. Off-road use at Warm Creek would be discontinued.
GMP Roads	Street-legal ATVs would be authorized for use on GMP roads in Glen Canyon with the exception of the Orange Cliffs Unit. Conventional motor vehicles are currently and would continue to be authorized on all GMP roads in Glen Canyon, including the Orange Cliffs Unit.	Same as alternative A.	OHVs and street-legal ATVs would be authorized for use on all GMP roads, including the Orange Cliffs Unit. Conventional motor vehicles are currently and would continue to be authorized on all GMP roads in Glen Canyon, including the Orange Cliffs Unit.	OHVs and street-legal ATVs would not be authorized for use on any GMP roads. Conventional motor vehicles are currently and would continue to be authorized on all GMP roads in Glen Canyon, including the Orange Cliffs Unit.	Street-legal ATVs would be authorized for use on paved GMP roads. OHVs and street-legal ATVs would also be authorized on unpaved GMP roads. No OHVs or street-legal ATVs would be authorized on GMP roads in the Orange Cliffs Unit. Conventional motor vehicles are currently and would continue to be authorized on all GMP roads in Glen Canyon, including the Orange Cliffs Unit.
Ferry Swale	Conventional motor vehicles, OHVs, and street-legal ATVs would be authorized for use on approximately 53 miles of designated ORV routes.	No ORV routes would be designated and existing routes would be restored to natural conditions.	Conventional vehicles, OHVs, and street-legal ATVs would be authorized for use on approximately 15 miles of designated ORV routes by permit. Other existing routes would be restored to natural conditions.	Same as alternative B.	Same as alternative C.

TABLE ES-3: ENVIRONMENTAL IMPACT SUMMARY BY ALTERNATIVE

IMPACT TOPIC	Alternative A: No Action	Alternative B: No Off-road Use	Alternative C: Increased Motorized Access	Alternative D: Decreased Motorized Access	Alternative E: Mixed Use (NPS Preferred Alternative)
Geology and Soils	Direct adverse impacts from crushing, shearing, compaction, and erosion on 250 acres of soil and geology at Lone Rock Beach; 180 acres at Lone Rock Beach Play Area; approximately 5,900 acres at 13 accessible shorelines; and along approximately 53 miles of ORV routes at Ferry Swale. Approximately 858 acres of low to moderately erodible soils directly disturbed at accessible shoreline areas and approximately 200 acres in Ferry Swale. No impacts on soils from conventional motor vehicle and street-legal ATV use on paved GMP roads; direct impacts on 714 acres of low to moderately erodible soils from compaction and indirect impacts on 3,428 acres of low to moderately erodible soils along unpaved GMP roads.	Beneficial impacts on soils and geology at approximately 250 acres at Lone Rock Beach, 180 acres at Lone Rock Beach Play Area; 7,300 acres at 15 accessible shorelines; and Ferry Swale as a result of discontinuation of off-road use in Glen Canyon. Direct and indirect impacts on soils and geology along GMP roads from conventional motor vehicles and street-legal ATVs would be the same as alternative A.	Direct adverse impacts from crushing, shearing, compaction, and erosion on 250 acres of soils and geology at Lone Rock Beach; 180 acres at Lone Rock Beach Play Area; approximately 7,300 acres at 15 accessible shorelines; and along approximately 15 miles of ORV routes at Ferry Swale. Approximately 867 acres of low to moderately erodible soils directly disturbed at accessible shoreline areas and approximately 34 acres in Ferry Swale. Direct and indirect impacts on soils and geology along GMP roads from conventional motor vehicles, OHVs, and street-legal ATVs would be similar to but more intense than alternative A.	Direct adverse impacts from crushing, shearing, compaction, and erosion on 250 acres of soil and geology at Lone Rock Beach; and approximately 1,100 acres at four accessible shorelines. Approximately 138 acres of low to moderately erodible soils directly disturbed at accessible shoreline areas. Beneficial impacts on soils and geology at Lone Rock Beach Play Area, 11 accessible shorelines, and Ferry Swale as a result of discontinuation of off-road use. Direct and indirect impacts on soils and geology along GMP roads from conventional motor vehicle would be similar to but less intense than alternative A.	Direct adverse impacts from crushing, shearing, compaction, and erosion on 250 acres of soil and geology at Lone Rock Beach; 180 acres at Lone Rock Beach Play Area, and approximately 6,000 acres at 14 accessible shorelines; and along approximately 15 miles of ORV routes at Ferry Swales. Beneficial impacts on soils at Warm Creek from discontinuation of off-road use. Approximately 888 acres of low to moderately erodible soils directly disturbed at accessible shoreline areas and approximately 34 acres in Ferry Swale. Direct and indirect impacts on soils and geology along paved GMP roads from conventional motor vehicles and street-legal ATVs would be the same as alternative A and more intense along unpaved GMP roads from conventional motor vehicles, OHVs, and street-legal ATVs.
Vegetation	Direct adverse impacts on vegetation communities consisting primarily of grasses, weeds, and bushes at Lone Rock Beach and Lone Rock Beach Play Area. Direct impact on vegetation at 13 accessible shorelines consisting primarily of blackbrush (416 acres), sand sagebrush (933 acres), and shadscale (612 acres) –dominant shrub species in upland shrublands of Glen Canyon. No direct impacts on vegetation from conventional motor vehicle and street-legal ATV use along paved GMP roads. Approximately 791 acres of blackbrush and 595 acres of shadscale directly impacted and 3,857 acres of blackbrush and 2,855 acres of shadscale indirectly impacted along unpaved GMP roads. Direct and indirect impacts on vegetation along 53 miles of designated ORV routes – primarily to shadscale and fourwing saltbrush.	Beneficial impacts on vegetation at Lone Rock Beach, Lone Rock Beach Play Area; 15 accessible shorelines; and Ferry Swale from discontinuation of off-road use in Glen Canyon. Direct and indirect impacts on vegetation along GMP roads from conventional motor vehicles and street-legal ATVs would be the same as alternative A.	Direct adverse impacts on vegetation communities consisting primarily of grasses, weeds, and bushes at Lone Rock Beach and Lone Rock Beach Play Area. Direct impact on vegetation at 15 accessible shorelines consisting primarily of blackbrush (688 acres), sand sagebrush (933 acres), and shadscale (1,684 acres). Direct and indirect impacts on vegetation along GMP roads from conventional motor vehicles, OHVs, and street-legal ATVs would be similar to but more intense than alternative A. Direct and indirect impacts on vegetation along 15 miles of designated ORV routes – primarily to shadscale.	Direct adverse impacts on vegetation communities consisting primarily of grasses, weeds, and bushes at Lone Rock Beach. Continued direct impacts on vegetation at four accessible shorelines consisting primarily of blackbrush (166 acres) and shadscale (215 acres) –dominant shrub species in upland shrublands of Glen Canyon. Direct and indirect impacts on vegetation along GMP roads from conventional motor vehicles would be similar to but less intense than alternative A. No direct or indirect impacts on vegetation at Lone Rock Beach Play Area or Ferry Swale as a result of discontinuation of off-road use.	Direct adverse impacts on vegetation communities consisting primarily of grasses, weeds, and bushes at Lone Rock Beach and Lone Rock Beach Play Area. Direct impact on vegetation at 14 accessible shorelines consisting primarily of blackbrush (688 acres), sand sagebrush (933 acres) and shadscale (1,561 acres). Beneficial impacts on vegetation at Warm Creek from discontinuation of off-road use. Direct and indirect impacts on vegetation along paved GMP roads from conventional motor vehicles and street-legal ATVs would be the same as alternative A and more intense than alternative A along unpaved GMP roads from conventional motor vehicles, OHVs, and street-legal ATVs. Direct and indirect impacts on vegetation along 15 miles of designated ORV routes – primarily to shadscale.

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Wildlife and Wildlife Habitat	Direct adverse impacts on wildlife and wildlife habitat at Lone Rock Beach, Lone Rock Beach Play Area, approximately 5,900 acres at 13 accessible shorelines, and along 53 miles of designated ORV routes in Ferry Swale as a result of disturbance, dust, displacement, vehicle-wildlife collisions, noise, and habitat destruction. Direct and indirect adverse impacts on wildlife along GMP roads from habitat disturbance and reduction, dust, and habitat fragmentation; and to wildlife habitat from erosion and sedimentation and potential for transport of invasive species.	Beneficial impacts on wildlife and wildlife habitat at Lone Rock Beach, Lone Rock Beach Play Area, 15 accessible shorelines, and Ferry Swale from discontinuation of off-road use. Direct and indirect impacts on wildlife and wildlife habitat along GMP roads from conventional motor vehicles and street-legal ATVs would be the same as alternative A.	Direct adverse impacts on wildlife and wildlife habitat at Lone Rock Beach, Lone Rock Beach Play Area, approximately 7,300 acres at 15 accessible shorelines, and concentrated along 15 miles of designated ORV routes in Ferry Swale as a result of disturbance, displacement, vehicle-wildlife collisions, noise, and habitat destruction. Direct and indirect impacts on vegetation along GMP roads from conventional motor vehicles, OHVs, and street-legal ATVs would be similar to but more intense than alternative A.	Direct adverse impacts on wildlife and wildlife habitat at Lone Rock Beach and at approximately 1,100 acres at four accessible shorelines as a result of disturbance, displacement, vehicle-wildlife collisions, noise, and habitat destruction. Beneficial impacts on wildlife and wildlife habitat at 11 accessible shorelines and Ferry Swale as a result of discontinuation of off-road use. Direct and indirect impacts on vegetation along GMP roads from conventional motor vehicles would be similar to but less intense than alternative A.	Direct adverse impacts on wildlife and wildlife habitat at Lone Rock Beach, Lone Rock Beach Play Area, and approximately 6,000 acres at 14 accessible shorelines as a result of disturbance, displacement, vehicle-wildlife collisions, noise, and habitat destruction. Beneficial impacts on wildlife and wildlife habitat at Warm Creek as a result of discontinuation of off-road use. Impacts at Ferry Swale would be the same as alternative C. Direct and indirect impacts on wildlife and wildlife habit along paved GMP roads from conventional motor vehicles and street-legal ATVs would be the same as alternative A and more intense than alternative A along unpaved GMP roads from conventional motor vehicles, OHVs, and street-legal ATVs.
Special-status Species	Adverse impacts on special-status species at Lone Rock Beach, Lone Rock Beach Play Area, 13 accessible shorelines, and along 53 miles of designated ORV routes in Ferry Swale as a result of habitat destruction, vehicle-wildlife collisions, and species disturbance and displacement. Adverse impacts on special-status species along GMP roads from habitat disturbance and reduction, dust, and habitat fragmentation; and to their habitat from erosion and sedimentation, and potential for transport of invasive species. Alternative A may affect, but is not likely to adversely affect the following federally or state-listed, or Glen Canyon species of concern. No effect on federally listed southwestern willow flycatcher, yellow-billed cuckoo, Brady pincushion cactus, Navajo sedge, and Jones’ cycladenia are expected as these species are not known to occur in habitat that would be impacted by management actions.	Beneficial impacts on special-status species at Lone Rock Beach, Lone Rock Beach Play Area, 15 accessible shorelines, and Ferry Swale as a result of discontinuation of off-road use. Impacts on special-status species along GMP roads from conventional motor vehicles and street-legal ATVs would be the same as alternative A. Alternative B may affect, but is not likely to adversely affect the following federally or state-listed, or Glen Canyon species of concern. No effect on federally-listed southwestern willow flycatcher, yellow-billed cuckoo, Brady pincushion cactus, Navajo sedge, and Jones’ cycladenia are expected as these species are not known to occur in habitat that would be impacted by management actions	Adverse impacts on special-status species at Lone Rock Beach, Lone Rock Beach Play Area, 15 accessible shorelines, and along 15 miles of designated ORV routes Ferry Swale as a result of habitat destruction, vehicle-wildlife collisions, and species disturbance and displacement. Impacts on special-status species along GMP roads from conventional motor vehicles, OHVs, and street-legal ATVs would be similar to but more intense as alternative A. Alternative C may affect, but is not likely to adversely affect the following federally or state-listed, or Glen Canyon species of concern. No effect on federally-listed southwestern willow flycatcher, yellow-billed cuckoo, Brady pincushion cactus, Navajo sedge, and Jones’ cycladenia are expected as these species are not known to occur in habitat that would be impacted by management actions	Adverse impacts on special-status species at Lone Rock Beach and four accessible shorelines as a result of habitat destruction, vehicle-wildlife collisions, and species disturbance and displacement. Beneficial impacts on special-status species at Lone Rock Beach Play Area and Ferry Swale plus 11 accessible shorelines as a result of discontinuation of off-road use. Impacts on special-status species along GMP roads from conventional motor vehicles would be similar to but potentially less intense than alternative A. Alternative D may affect, but is not likely to adversely affect the following federally or state-listed, or Glen Canyon species of concern. No effect on federally listed southwestern willow flycatcher, yellow-billed cuckoo, Brady pincushion cactus, Navajo sedge, and Jones’ cycladenia are expected as these species are not known to occur in habitat that would be impacted by management actions.	Adverse impacts on special-status species at Lone Rock Beach, Lone Rock Beach Play Area, and 14 accessible shorelines as a result of habitat destruction, vehicle-wildlife collisions, and species disturbance and displacement. Beneficial impacts on special-status species at Warm Creek as a result of discontinuation of off-road use. Impacts at Ferry Swale would be the same as alternative C. Impacts on special-status species along paved GMP roads from conventional motor vehicles and street-legal ATVs would be the same as alternative A and more intense along unpaved GMP roads from conventional motor vehicles, OHVs, and street-legal ATVs. Alternative E may affect, but are not likely to adversely affect the following federally or state-listed, or Glen Canyon species of concern. No effect on federally listed southwestern willow flycatcher, yellow-billed cuckoo, Brady pincushion cactus, Navajo sedge, and Jones’ cycladenia are expected as these species are not known to occur in habitat that would be impacted by management actions

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Soundscapes	Direct impacts as a result of noise generated from conventional motor vehicles, OHVs, and street-legal ATVs total 362,269 acres of land (28.88% of the Glen Canyon land area). These areas could potentially experience a 3-dBA increase in natural ambient due to motorized vehicle operations. During times when no motorized vehicles are operating in a particular area, no impacts would occur.	Direct impacts as a result of noise generated from conventional motor vehicles, OHVs, and street-legal ATVs total 351,408 acres of land (28.02% of the Glen Canyon land area). These areas could potentially experience a 3-dBA increase in natural ambient due to motorized vehicle operations. During times when no motorized vehicles are operating in a particular area, no impacts would occur. The degree and geographic extent of impacts on soundscapes would be substantially decreased through implementation of the 96-dBA limit on OHVs and street-legal ATVs (80,906 fewer acres within the direct impact noise effect zone or 21.57% of Glen Canyon).	Direct impacts as a result of noise generated from conventional motor vehicles, OHVs, and street-legal ATVs total 479,270 acres of land (38.21% of the Glen Canyon land area). These areas could potentially experience a 3-dBA increase in natural ambient due to motorized vehicle operations. During times when no motorized vehicles are operating in a particular area, no impacts would occur. The degree and geographic extent of impacts on soundscapes would be substantially increased through implementation of the 96-dBA limit on OHVs and street-legal ATVs (101,715 fewer acres within the direct impact noise effect zone or 30.10% of Glen Canyon land area).	Direct impacts as a result of noise generated from conventional motor vehicles total 6,351 acres of land (0.51% of the Glenn Canyon land area). These areas could potentially experience a 3-dBA increase in natural ambient due to conventional vehicle operations. During times when no motorized vehicles are operating in a particular area, no impacts would occur. The degree and geographic extent of impacts on soundscapes would not be affected by the 96-dBA limit because no OHV or street-legal ATV use would be allowed (the limit only applies to OHVs and street-legal ATVs).	Direct impacts as a result of noise generated from conventional motor vehicles, OHVs, and street-legal ATVs total 373,135 acres of land (28.75% of the Glen Canyon land area). These areas could potentially experience a 3-dBA increase in natural ambient due to motorized vehicle operations. During times when no motorized vehicles are operating in a particular area, no impacts would occur. The degree and geographic extent of impacts on soundscapes would be substantially increased through implementation of the 96-dBA limit on OHVs and street-legal ATVs (82,190 fewer acres within the direct impact noise effect zone or 23.20% of Glen Canyon).
Visitor Use and Experience	Current visitor use patterns would continue at Lone Rock Beach, Lone Rock Beach Play Area, and 13 accessible shorelines. Some visitor experience could be diminished at Lone Rock Beach, Lone Rock Beach Play Area, and Ferry Swale as a result of noise and air emissions produced by OHVs and street-legal ATVs. No measurable changes are expected on visitors using conventional motor vehicles or street-legal ATVs on GMP roads. Visitors seeking a quiet, backcountry experience may be adversely impacted by the noise street-legal ATVs produce in the more remote areas of Glen Canyon.	Visitor use patterns would be considerably impacted at Lone Rock Beach, Lone Rock Beach Play Area, 15 accessible shorelines, and Ferry Swale due to the discontinuation of off-road use. Although visitors would not be able to engage in off-road use in these areas, they would still be able to access the sites by parking at the end of the road and walking to the site. Impacts on visitor use and experience from conventional motor vehicles and street-legal ATVs on GMP roads would be the same as alternative A.	Impacts on visitor use and experience at Lone Rock Beach and Lone Rock Beach Play Area would be similar to alternative A, but with an additional small adverse impact on visitor experience with the requirement to obtain a permit. An increase in number of accessible shorelines and authorization of OHVs and street-legal ATVs for use at accessible shorelines, in addition to conventional motor vehicles, would increase the areas available for OHVs and street-legal ATV opportunities and provide a beneficial impact for these users. Expansion and authorization of OHV and street-legal ATV use at accessible shorelines could result in adverse impacts on visitors seeking a quieter experience as a result of increase in noise and air emissions from OHVs and street-legal ATVs. Impacts on visitor use and experience from conventional motor vehicles, OHVs, and street-legal ATVs on GMP roads would be similar to but more intense and widespread than alternative A.	Impacts on visitor use and experience at Lone Rock Beach would be similar to alternative A, but with an additional small adverse impact on visitor experience with the requirement to obtain a permit. Visitor use patterns would be considerably impacted at Lone Rock Beach Play Area and Ferry Swale as a result of discontinuation of off-road use in these areas, resulting in severe adverse impacts. Four accessible shoreline areas would remain available for use by conventional motor vehicles, but depending on the level of use, visitors may experience a negative impact from increased crowding. However, generally, visitor experience at these shoreline areas would not be noticeably impacted and overall visitor use patterns would not likely change because two of the four accessible shorelines already experience high visitation comparable to other accessible shorelines. Visitor use patterns would change substantially as access by OHVs or street-legal ATVs within Glen Canyon would not be authorized.	Impacts on visitor use and experience at Lone Rock Beach, Lone Rock Beach Play Area, and Ferry Swale would be similar to alternative C. An increase in number of accessible shorelines and authorization of street-legal ATVs for use at accessible shorelines, in addition to conventional motor vehicles, would increase the areas available for street-legal ATV opportunities and provide a beneficial impact for those users. Expansion and authorization of street-legal ATV use at accessible shorelines could result in adverse impacts on visitors seeking a quieter experience as a result of increase in noise and air emissions from street-legal ATVs. Impacts on visitor use and experience from conventional motor vehicles and street-legal ATVs on paved GMP roads would be the same as alternative A and more intense and widespread from on unpaved GMP roads from conventional motor vehicles, OHVs, and street-legal ATVs.
Archeology	Direct adverse impacts on archeological resources could involve 3 not evaluated sites in Lone Rock Beach Play Area; 3 eligible sites and 2 not evaluated sites at accessible shorelines; and 6 eligible sites and 3 not evaluated sites in Ferry Swale. Indirect impacts on archeological resources could involve 3 not evaluated sites at Lone Rock Beach; 1 not evaluated site at Lone Rock Beach Play Area; and 19 eligible sites and 37 not evaluated sites at accessible shorelines; and 17 eligible sites and 6 not evaluated sites along GMP roads.	Indirect adverse impacts on archeological resources could involve 17 eligible sites and 6 not evaluated sites along GMP roads.	Direct adverse impacts on archeological resources could involve 3 not evaluated sites in Lone Rock Beach Play Area; 6 eligible sites and 4 not evaluated sites at accessible shorelines; and 6 eligible sites and 3 not evaluated sites in Ferry Swale. Indirect impacts on archeological resources could involve 3 not evaluated sites at Lone Rock Beach; 1 not evaluated site at Lone Rock Beach Play Area; and 19 eligible sites and 37 not evaluated sites at accessible shorelines; and 39 eligible sites and 23 not evaluated sites along GMP roads.	Indirect impacts on archeological resources could involve 3 not evaluated sites at Lone Rock Beach; 8 eligible sites and 5 not evaluated sites at accessible shorelines; and no eligible sites or not evaluated sites along GMP roads.	Direct adverse impacts on archeological resources could involve 3 not evaluated sites in Lone Rock Beach Play Area; 6 eligible sites and 2 not evaluated sites at accessible shorelines; and 6 eligible sites and 3 not evaluated sites in Ferry Swale. Indirect impacts on archeological resources could involve 3 not evaluated sites at Lone Rock Beach; 1 not evaluated site at Lone Rock Beach Play Area; and 19 eligible and 37 not evaluated sites at accessible shorelines; and 17 eligible sites and 6 not evaluated sites along GMP roads.

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Ethnographic Resources	Beneficial impact as a result of continued access to the Hole-in-the Rock traditional cultural property (TCP) site by members of The Church of Jesus Christ of Latter-day Saints for permitted activities. Potential for indirect adverse impacts on the Hole-in-the-Rock and potentially National Register-eligible Hole-in-the-Rock landscape TCP as a result of conventional motor vehicles and street-legal ATVs allowed on the Hole-in-the-Rock Road (an unpaved GMP road).	Impacts would be the same as alternative A.	Increased beneficial impacts for members of The Church of Jesus Christ of Latter-day Saints as a result of continued and increased access (by conventional motor vehicles, OHVs, and street-legal ATVs on Hole-in-the-Rock Road) to the Hole-in-the Rock TCP site for permitted activities. Increased potential for indirect adverse impacts on the Hole-in-the-Rock and potentially National Register-eligible Hole-in-the-Rock landscape TCP as a result of conventional motor vehicles, OHVs, and street-legal ATVs allowed on the Hole-in-the-Rock Road.	Decreased beneficial impacts for members of The Church of Jesus Christ of Latter-day Saints as a result of continued but decreased access (only by conventional motor vehicles on Hole-in-the-Rock Road) to the Hole-in-the Rock TCP site for permitted activities. Decreased potential for indirect adverse impacts on the Hole-in-the-Rock and potentially National Register eligible Hole-in-the-Rock landscape TCP as a result of reduction in the type of motor vehicles (conventional motor vehicles only) allowed on the Hole-in-the-Rock Road.	Impacts would be the same as alternative C, as the Hole-in-the-Rock would be accessed by conventional motor vehicles, OHVs, and street-legal ATVs.
Socioeconomics	The current level of visitation at Glen Canyon is expected to continue. Visitation and use of Lone Rock Beach, Lone Rock Beach Play Area, 13 accessible shorelines, and Ferry Swale is expected to continue, beneficially contributing to local economies and supporting jobs, income, and gross regional product. The ability to continue to ride conventional motor vehicles and street-legal ATVs on GMP roads would likely have a minimal impact on socioeconomic resources. Use of 53 miles of designated ORV routes in Ferry Swale would have limited impacts on socioeconomic resources.	Potential adverse impacts would occur with decreased visitor spending as a result of discontinuation of off-road use within Glen Canyon. Impacts on socioeconomic resources from use of GMP roads by conventional motor vehicles and street-legal ATVs would be the same as alternative A.	Visitation and use of Lone Rock Beach and Lone Rock Beach Play Area would remain similar to alternative A, beneficially contributing to local economies and supporting jobs, income, and gross regional product; although a permit system may discourage a small amount of visitation to these sites. Additional opportunities for OHV and street-legal ATV use at the 15 accessible shorelines and on GMP roads could also contribute to the local economy. Because off-road use has been rapidly increasing in Utah and Arizona, allowing OHVs and street-legal ATVs at accessible shorelines could result in increased visitation to these areas. Beneficial impacts on socioeconomic resources from use of GMP roads and 15 miles of designated ORV routes in Ferry Swale by conventional motor vehicles, OHVs, and street-legal ATVs would be limited.	Prohibition of OHV and street-legal ATVs within Glen Canyon would lead to decreased visitation by these types of vehicles at Lone Rock Beach and Lone Rock Beach Play Area, although this portion of visitation is very small. Visitation overall within Glen Canyon would be expected to slightly decrease, with slight adverse effects on local economies. The loss of visitation at 11 accessible shoreline areas where off-road use would be discontinued would adversely impact local economies (assumed to equal the total visitation at Stanton Creek – approximately 14,000 annual visitors) with a potential loss of \$2.3 million in visitor spending and 28 jobs. These economic impacts would account for a very small portion of the employment and economic activity in the study area. Impacts on socioeconomic resources from use of GMP roads by conventional motor vehicles would be limited.	Impacts on socioeconomic resources would be expected to be the similar to those described under alternative C, where visitation and visitor spending associated with users at Lone Rock Beach, Lone Rock Beach Play Area, and Ferry Swale would continue to beneficially contribute and support local economies. Additional opportunities would beneficially contribute to local economies as a result of expanded street-legal ATV use at the 14 accessible shorelines and OHV uses on unpaved GMP roads. Because off-road use has been rapidly increasing in Utah and Arizona, allowing street-legal ATVs at accessible shorelines could result in increased visitation to these areas. However, it is expected that beneficial effects on local economies would be limited.
Health and Safety	Adverse impacts on health and safety as conventional motor vehicles, OHVs, and street-legal ATVs would be allowed to operate together at Lone Rock Beach, Lone Rock Beach Play Area, along 53 miles of designated ORV routes at Ferry Swale.	Beneficial impacts on health and safety of conventional motor vehicle users, OHV users, and street-legal ATV users, as off-road use would be eliminated from Lone Rock Beach, Lone Rock Beach Play Area, all accessible shorelines areas, and Ferry Swale.	Adverse impacts on health and safety as conventional motor vehicles, OHVs and street-legal ATVs would be allowed to operate together at Lone Rock Beach, Lone Rock Beach Play Area, at 15 accessible shorelines, along GMP roads, and along 15 miles of designated ORV routes at Ferry Swale. Additional requirement for ORV permit and flag at Lone Rock Beach Play Area would provide some beneficial impacts.	Beneficial impacts on health and safety of conventional vehicle users, OHV users, and street-legal ATV users, as off-road use would be eliminated from Lone Rock Beach Play Area and Ferry Swale. Additional beneficial impacts as a result of only conventional vehicles authorized for use within Glen Canyon – at Lone Rock Beach and four authorized accessible shorelines.	Adverse impacts for health and safety as conventional motor vehicles, OHVs, and street-legal ATVs would be allowed to operate together at Lone Rock Beach, Lone Rock Beach Play Area, along unpaved GMP roads, and along 15 miles of designated ORV routes at Ferry Swale. Additional requirement for ORV permit and flag at Lone Rock Beach Play Area would provide some beneficial impacts, similar to alternative C.

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Paleontological Resources	Adverse impacts on paleontological resources stemming from erosion as a result of motor vehicle use on 250 acres Lone Rock Beach, 180 acres at Lone Rock Beach Play Area, approximately 5,900 acres at 13 accessible shorelines, and along approximately 53 miles of ORV routes at Ferry Swale. Approximately 1,057 acres of geologic formation with varying degrees of trace paleontological resources (including Organ Rock, Moenkopi, Chinle, Tropic Shale, and Carmel Formations) directly disturbed at accessible shoreline areas and approximately 155 acres in Ferry Swale. No direct impacts on paleontological resources from conventional motor vehicle and street-legal ATV use on paved GMP roads; direct impacts on approximately 2,000 acres and indirect impacts on approximately 5,400 acres of geologic formations with potential for paleontological resources along unpaved GMP roads.	Beneficial impacts on paleontological resources at approximately 250 acres at Lone Rock Beach, 180 acres at Lone Rock Beach Play Area, 7,300 acres at 15 accessible shorelines, and Ferry Swale from discontinuation of off-road use in Glen Canyon. Direct and indirect impacts on paleontological resources along GMP roads from conventional motor vehicles and street-legal ATVs would be the same as alternative A.	Adverse impacts on paleontological resources stemming from erosion as a result of motor vehicle use on 250 acres Lone Rock Beach, 180 acres at Lone Rock Beach Play Area, approximately 7,300 acres at 15 accessible shorelines, and along approximately 15 miles of ORV routes at Ferry Swale. Approximately 1,152 acres of geologic formation with varying degrees of trace paleontological resources (including Organ Rock, Moenkopi, Chinle, Tropic Shale, and Carmel Formations) directly disturbed at accessible shoreline areas and approximately 11 acres in Ferry Swale. Direct and indirect impacts on paleontological resources along GMP roads from conventional motor vehicles, OHVs, and street-legal ATVs would be similar to alternative A.	Adverse impacts on paleontological resources stemming from erosion as a result of motor vehicle use on 250 acres Lone Rock Beach and approximately 1,100 acres at 4 accessible shorelines. Approximately 230 acres of geologic formation with varying degrees of trace paleontological resources (including Organ Rock, Moenkopi, Chinle, Tropic Shale, and Carmel Formations) directly disturbed at accessible shoreline areas. No direct or indirect impacts at Lone Rock Beach Play Area, 11 accessible shorelines and Ferry Swale from discontinuation of off-road use in those areas. Impacts on paleontological resources along GMP roads from conventional motor vehicles, would be similar to alternative A.	Adverse impacts on paleontological resources stemming from erosion as a result of motor vehicle use on 250 acres Lone Rock Beach, 180 acres at Lone Rock Beach Play Area, approximately 6,000 acres at 14 accessible shorelines, and along approximately 15 miles of ORV routes at Ferry Swale. Beneficial impacts on paleontological resources at Warm Creek from discontinuation of off-road use. Approximately 1,074 acres of geologic formation with varying degrees of trace paleontological resources (including Organ Rock, Moenkopi, Chinle, Tropic Shale, and Carmel Formations) directly disturbed at accessible shoreline areas and approximately 11 acres in Ferry Swale. Impacts on paleontological resources along paved GMP roads from conventional motor vehicles, and street-legal ATVs and along unpaved GMP roads from conventional motor vehicles, OHVs, and street-legal ATVs would be similar to alternative A.
Wilderness	Without the 96-dBA limit, 16.13% of proposed wilderness areas would be directly impacted by motor vehicle noise.	With the 96-dBA limit, 10.63% of proposed wilderness areas would be directly impacted by motor vehicle noise.	With the 96-dBA limit, 17.15% of proposed wilderness areas would be directly impacted by motor vehicle noise.	With (and without the 96-dBA limit) 0.11% of proposed wilderness areas would be directly impacted by motor vehicle noise. The degree and geographic extent of impacts on soundscapes and thus wilderness would not be affected by the 96-dBA limit because no OHV or street-legal ATV use would be allowed (the limit only applies to OHVs and street-legal ATVs).	With the 96-dBA limit, 10.74% of proposed wilderness areas would be directly impacted by motor vehicle noise.

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Acronyms

ATV	all-terrain vehicle
BLM	Bureau of Land Management
BP	before present
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CRMP	Cultural Resources Management Plan
DCP/EA	development concept plan / environmental assessment
DOT	Department of Transportation
EA	environmental assessment
EA/DCP	environmental assessment/development concept plan
EIS	environmental impact statement
EPA	Environmental Protection Agency
FONSI	Finding of No Significant Impact
GHG	greenhouse gas
GIS	geographic information system
GMP	General Management Plan
IDT	Interdisciplinary Team
mph	miles per hour
NAAQS	National Ambient Air Quality Standards
NAU	Northern Arizona University
NEPA	National Environmental Policy Act
NFI	noise-free interval
NHPA	National Historic Preservation Act
NPS	National Park Service
OHV	off-highway vehicle
ORV	off-road vehicle
PEPC	Planning, Environment, and Public Comment
plan/DEIS	Off-Road Vehicle Management Plan/Draft Environmental Impact Statement
ROD	Record of Decision
RV	recreational vehicle
SHPO	State Historic Preservation Office (or officer)
TCP	traditional cultural property
THPO	Tribal Historic Preservation Office
USFWS	U.S. Fish and Wildlife Service

