CHAPTER 1: PURPOSE OF AND NEED FOR ACTION

This "Purpose of and Need for Action" chapter explains what this Off-road Vehicle Management Plan / Draft Environmental Impact Statement (plan/DEIS) intends to accomplish and why the National Park Service (NPS) is taking action at this time. The plan/DEIS presents four action 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 range of alternatives evaluated includes one alternative prohibiting all off-road use in Glen Canyon National Recreation Area (Glen Canyon). If at the conclusion of this plan/DEIS and decision-making process the alternative selected for implementation includes authorizing off-road use, then this plan/DEIS will become the Off-road Vehicle (ORV) Management Plan and form the basis for a special regulation to manage 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.

If at the conclusion of this plan/DEIS and decision-making process the alternative selected for implementation includes authorizing off-road use, then this plan/DEIS will become the ORV Management Plan and form the basis for a special regulation that is required to authorize off-road use at the 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 (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.

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 (NPS 2011a).

OBJECTIVES IN TAKING ACTION

Objectives are specific goals that help define what each alternative must achieve for the plan/DEIS to be considered a success. Each alternative was evaluated against the objectives to ensure that the alternative satisfies the purpose of

this plan and resolves the need for action as stated above. The objectives for managing off-road use 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.

TERMINOLOGY

Vehicle technology is changing rapidly; state vehicle 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, legal codes, production standards, and other factors beyond the control of this plan/DEIS. The following definitions explain the terms commonly used throughout this plan/DEIS.

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 (36 CFR 1.4), see also Park Road Standards (NPS 1984).

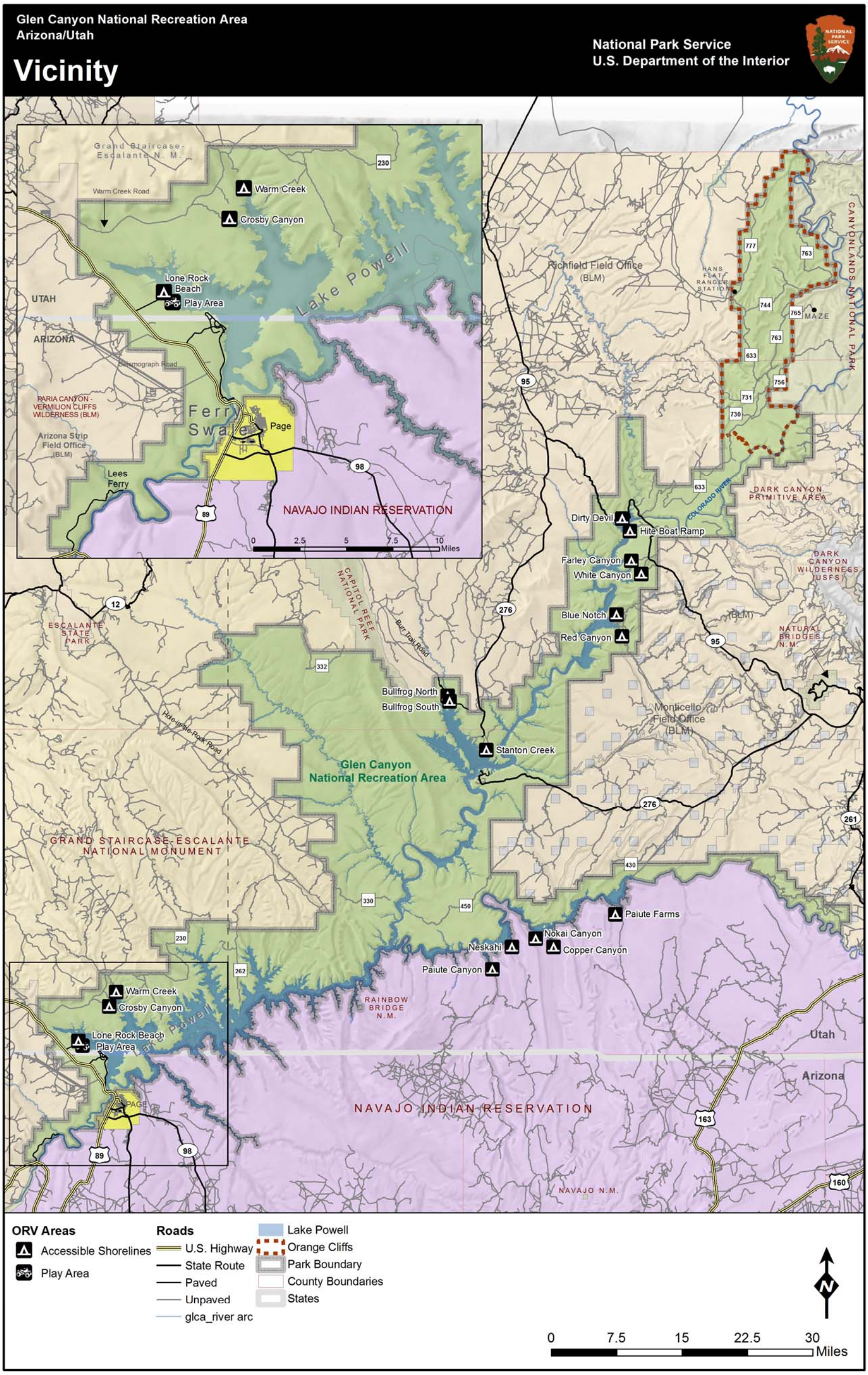
General Management Plan (GMP) Road: Roads (paved and unpaved) open to motor vehicle travel as designated in the Glen Canyon 1979 General Management Plan (figure 1). All other roads are closed to public motor vehicle travel. Park roads in Glen Canyon are the same as GMP roads.

Off-road Use: The terms "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 park roads or parking areas within the National Park System is illegal unless it is authorized by a special regulation.

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 (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" (Executive Order 11644). Because the federal definition is so broad, the term "ORV" is not sufficient to describe the full scope of management activities in this plan/DEIS. This plan/DEIS distinguishes between conventional motor vehicles (e.g., automobiles, trucks, cars, and other vehicles that are licensed and registered for interstate travel), and non-conventional motor vehicles (e.g., all-terrain vehicles (ATVs), dirt bikes, sand rails, side-by-sides, dune buggies, etc.), which generally are not licensed for interstate travel.

Conventional Motor Vehicle: The term "conventional motor vehicle" is used throughout this plan/DEIS to distinguish motor vehicles designed primarily for use and operation on streets and highways and are licensed and registered for interstate travel but can be used off-road, from non-conventional vehicles primarily designed for off-road use. Automobiles, vans, highway motorcycles, sport utility vehicles, recreational vehicles (RVs), pickup trucks, or buses for which the primary purpose of manufacture is transportation and/or commerce are examples of conventional motor vehicles. Conventional motor vehicles do not include OHVs, ATVs, or snowmobiles.



*Note: additional road segments may exist but may not be depicted on the map due to scale.

FIGURE 1: GLEN CANYON NATIONAL RECREATION AREA

Non-conventional Motor Vehicle: The term "non-conventional motor vehicle" is used throughout this plan/DEIS to distinguish ATVs, OHVs, dirt bikes, sand rails, side-by-sides, dune buggies, and other vehicles primarily designed for off-road use from conventional motor vehicles. 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: OHVs and street-legal ATVs. Snowmobiles are not included in this term.

Off-highway Vehicle (OHV): NPS has no definition of OHVs in the federal code. Glen Canyon overlaps two state jurisdictions (Arizona and Utah) with distinct vehicle codes that define OHV operator and vehicle requirements; see the "Conventional Motor Vehicle Operator Requirements" section in "Chapter 2: Alternatives." In Utah, Utah State Park regulations define OHVs as follows:

> (1) "Off-highway vehicle" means any snowmobile, all-terrain type I vehicle, all-terrain type II vehicle, or motorcycle. (this plan/DEIS would not authorize snowmobile use at Glen Canyon)
>
> (2) "All-terrain type I vehicle" means any motor vehicle 52 inches or less in width, having an un-laden dry weight of 1500 pounds or less, traveling on three or more low pressure tires, having a seat designed to be straddled by the operator, and designed for or capable of travel over unimproved terrain. (effective July 1, 2009)
>
> (3)(a) "All-terrain type II vehicle" means any other motor vehicle, not defined in Subsection (2), (10), or (21), designed for or capable of travel over unimproved terrain.
>
> (3)(b) "All-terrain type II vehicle" does not include golf carts, any vehicle designed to carry a disabled person, any vehicle not specifically designed for recreational use, or farm tractors as defined under Section 41-1a-102.

The Arizona Game and Fish Department and Arizona State Parks define OHVs as follows:

> (1) A motorized vehicle when operated primarily off of highways on land, water, snow, ice or other natural terrain or on a combination of land, water, snow, ice or other natural terrain. (this plan/DEIS would not authorize snowmobile use at Glen Canyon)
>
> (2) Includes a two-wheel, three-wheel or four-wheel vehicle, motorcycle, four-wheel drive vehicle, dune buggy, amphibious vehicle, ground effects or air cushion vehicle, and any other means of land transportation deriving motive power from a source other than muscle or wind.
>
> (3) Does not include a vehicle that is either designed primarily for travel on, over or in the water, or used in installation, inspection, maintenance, repair or related activities involving facilities for the provision of utility or railroad service.

Street-legal All-terrain Vehicle (ATV): NPS has no definition of ATVs 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 freeway[1] or a limited access highway, if they meet the "street-legal" definition under the Utah state motor vehicle and traffic code, currently described at UCA 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.

In Arizona, ATVs are legal to operate on a road or highway if they meet the "street-legal" definition under the Arizona state motor vehicle and traffic code, currently described at ARS 28-1171–1181 (Article 20 - Off-highway Vehicles). Street-legal ATVs must comply with the same requirements as a road motorcycle for registration, titling, odometer statement, vehicle identification number, license plates, registration fees, and county motor vehicle emissions inspection and maintenance programs. Street-legal ATVs must also comply with the same requirements as conventional motor vehicles for motor vehicle insurance and safety inspection requirements.

Figure 2 shows the relationship between conventional and non-conventional vehicles and OHVs and street-legal ATVs that guides the use of these terms for the purposes of this plan.

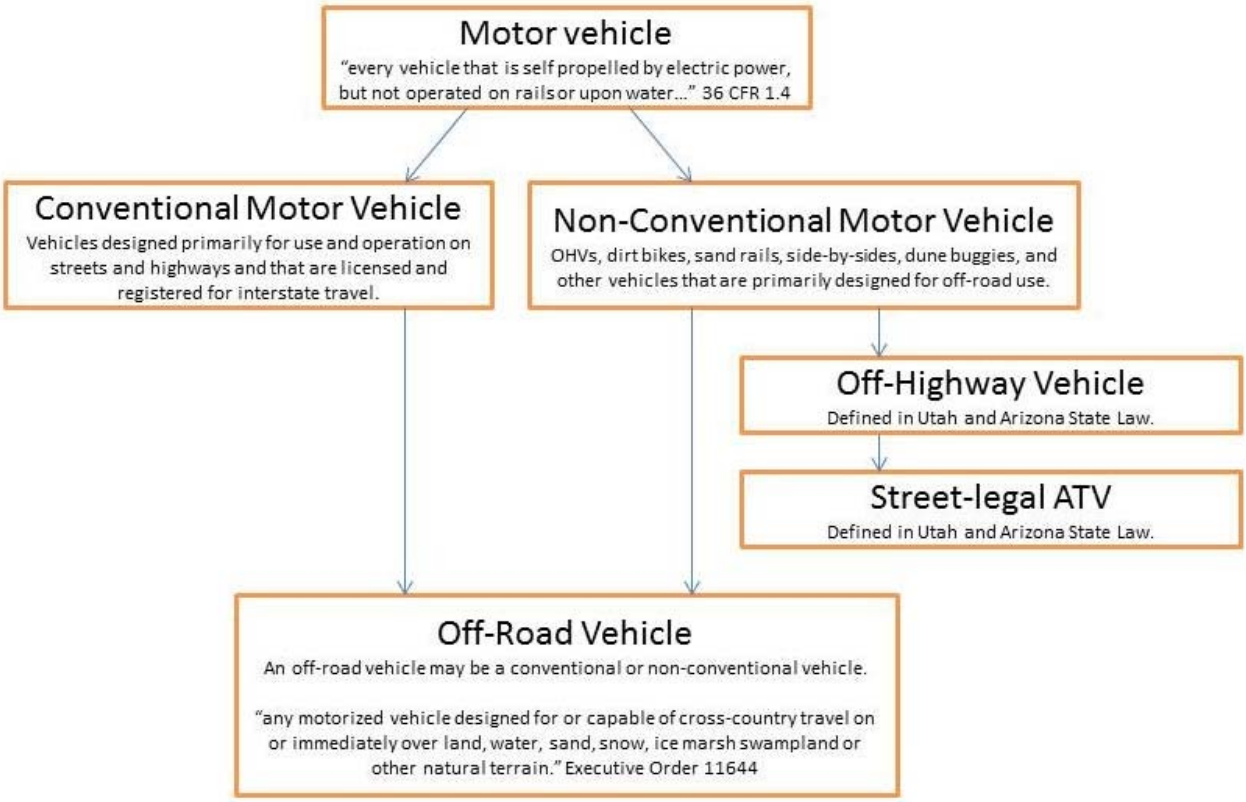


FIGURE 2: RELATIONSHIP BETWEEN TYPES OF MOTOR VEHICLES USED WITHIN THE PLAN/DEIS

Off-road Vehicle (ORV) Area: NPS has no definition of ORV areas in the federal code. This plan/DEIS uses the term "ORV area" as referenced in 36 CFR 4.10 to describe an area designated for off-road use.

Off-road Vehicle (ORV) Route: NPS has no definition of ORV routes in the federal code. This plan/DEIS uses the term "ORV route" as referenced in 36 CFR 4.10 to describe a specific linear corridor designated for off-road motor vehicle travel between identified points or locations.

PROJECT STUDY AREA

The geographic study area for this plan/DEIS is Glen Canyon National in Utah and Arizona (figure 1), unless otherwise noted under each resource topic.

Glen Canyon encompasses 1,254,306 acres in northern Arizona and southeastern Utah (figure 1). 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 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 principal feature of Glen Canyon is Lake Powell, a 186-mile-long reservoir formed behind the 710-foot-high Glen Canyon Dam on the Colorado River. Glen Canyon also possesses significant backcountry resources of outstanding scenic, scientific, and historic interest. The area is characterized by Colorado Plateau physiography: widespread layers of sedimentary rock, gigantic cliffs, towering buttes, and a multitude of canyons that carry many of the "glens," or seeps and drip gardens, for which Glen Canyon is named. Natural forces and time have conspired to create numerous alcoves, arches, and natural bridges. In this vast landscape is a fragile but complex ecosystem that, although sparse-looking, supports a wealth of plant and animal communities adapted to the arid to semi-arid environment. Glen Canyon has been home to people for thousands of years, from the archaic and prehistoric Indian cultures that roamed and lived in the canyons to more recent explorers and wanderers.

Although Glen Canyon was not established as a unit of the national park system until 1972, portions of Glen Canyon have been administered for public uses by NPS since 1958. The Glen Canyon Recreation Area, as it was then known, encompassed approximately 1,196,500 acres of lands with restricted public entry under the Colorado River Storage Project Act of 1956 (Public Law [PL] 84-485) or from a land exchange with the Navajo Nation under the Navajo Land Exchange Act of 1958 (PL 85-868). Additional acreage, including sections of the Escalante region, continued to be added or acquired as the area was developed as Glen Canyon National Recreation Area under PL 92-593 in 1972.

PURPOSE AND SIGNIFICANCE OF GLEN CANYON NATIONAL RECREATION AREA

While all parks are governed by the principles of the NPS Organic Act, each individual park is established to fulfill specific purposes based on the area's unique and nationally significant resources. The specific purposes outlined in the enabling legislation form the foundation for each park's GMP, which serves as the broad, long-term umbrella plan for managing the park.

Glen Canyon was established in 1972 by act of Congress (PL 92-593) 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).

The act states that "the Secretary shall administer, protect, and develop the recreation area in accordance with the provisions of the act of August 25, 1916 (NPS Organic Act), as amended and supplemented, and with any other statutory authority available to him for the conservation and management of natural resources" (16 USC 460dd-3).

The primary objective for Glen Canyon, as established in the GMP, is "to manage the recreation area so that it provides maximal recreational enjoyment to the American public and their guests" (NPS 1979). As stated in the GMP and Glen Canyon's strategic plan (NPS 2007e), Glen Canyon is important 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.

The primary objective for Glen Canyon is "to manage the recreation area so that it provides maximal recreational enjoyment to the American public and their guests" (NPS 1979).

- 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.

The objectives and goals for management of Glen Canyon stated in the enabling legislation and GMP will help provide context for the future management of ORVs.

MOTOR VEHICLE USE WITHIN GLEN CANYON

Glen Canyon allows for a variety of recreational opportunities, including off-road use and on-road use by motor vehicles. The use of motorized vehicles to reach off-road destinations in Glen Canyon predates the establishment of the recreation area. 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.

Following a rapid increase in visitation 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 indiscriminate off-road use. In response, NPS developed a management plan for Lone Rock Beach (NPS 1981) as well as a management plan for 20 accessible shoreline areas on Lake Powell (NPS 1988). Twelve of the 20 accessible shoreline sites were developed to provide for off-road driving.

ORV Tracks at Warm Creek Area

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.

In 1986, a Paiute Farms / San Juan Marina Development Concept Plan Environmental Assessment (NPS 1986) evaluated the development of a marina which 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.

Glen Canyon's planning efforts reflected national trends. By 1972, the widespread popularity and uncontrolled off-road use had led to the first of two executive orders seeking to unify federal policies toward the management of off-road use on federal lands.

Executive Order 11644, "Use of Off-road Vehicles on the Public Lands," issued in 1972 and amended by Executive Order 11989 in 1977, requires federal agencies that allow off-road use to designate specific areas and routes on public lands where the use may be permitted. Executive Order 11644 was issued in response to the widespread and rapidly increasing off-road use on public lands "often for legitimate purposes but also in frequent conflict with wise land and resource management practices, environmental values, and other types of recreational activity."

Title 36 of the Code of Federal Regulations, Part 4, contains regulations regarding vehicles and traffic safety on NPS lands and Section 4.10 requires that "routes and areas designated for off-road use shall be promulgated as special regulations" and that the designation of routes and areas "shall comply with §1.5 of this chapter and [Executive Order] 11644" (37 Federal Register [FR] 2887). ORV routes and areas may be designated only in national recreation areas, national seashores, national lakeshores, and national preserves.

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 the Plaintiffs 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]).

MOTOR VEHICLE REGULATIONS WITHIN GLEN CANYON

NPS regulations that govern traffic on park roads include a provision at 36 CFR 4.2, which states, "Unless specifically addressed by regulations in this chapter, traffic and the use of vehicles within a park area are governed by State law. State law that is now or may later be in effect is adopted and made a part of the regulations in this part." Under this federal regulation, NPS adopts non-conflicting Utah traffic code to govern the use of vehicles on GMP roads within the Utah portion of Glen Canyon. Non-conflicting Arizona traffic code is adopted for GMP roads within the Arizona portion of Glen Canyon.

On March 13, 2008, the Governor of Utah signed into law Senate bill 181. The effect of this public law was to amend the Utah traffic code to authorize a new class of vehicle, known as "street-legal ATVs" (Utah Code 41-6a-1509) effective October 1, 2008. Because this plan/DEIS was underway at that time, Glen Canyon has allowed ATVs that comply with Utah code and meet the street-legal requirements to be operated on GMP roads in Glen Canyon, subject to the same rules that apply to conventional motor vehicles, as an interim measure.

Similar motor vehicle and operator requirements exist in Arizona for those operating motor vehicles, including ATVs. In order for ATVs to meet the street-legal definition under the Arizona state motor vehicle and traffic code, they must adhere to the requirements currently described at ARS 28-1171 to 1181, Off Highway Vehicles. This section of the code describes the requirements and conditions under which ATVs may be classified as "street-legal," or legal to operate on a road or highway in the state of Arizona.

Under Utah traffic code (UCA 41-22-10.1) the controlling agency is provided the opportunity to designate the areas that are open for OHV use and to post or mark those areas appropriately. Under the 1972 enabling legislation for Glen Canyon, the U.S. Congress designated NPS as the controlling federal agency. County ordinances promulgated under this statute would not apply within Glen Canyon.

NPS may supplement state vehicle codes to resolve visitor safety and/or resource protection concerns that cannot be satisfied on a servicewide basis by applying and enforcing state vehicle code provisions. This plan/DEIS will evaluate whether that is necessary for the use of non-conventional motor vehicles on GMP roads.

NPS may supplement state vehicle codes to resolve visitor safety and/or resource protection concerns that cannot be satisfied on a servicewide basis by applying and enforcing state vehicle code provisions.

SCOPE OF THE PLAN/DEIS

The scope of the plan/DEIS is determined by the purpose of and need for action and is used to identify those management alternatives that directly address the established purpose of and need for action.

This scope includes the evaluation of locations currently where off-road use is allowed at Glen Canyon. Off-road use is currently allowed but not authorized at Lone Rock Beach, Lone Rock Beach Play Area, and the 13 designated accessible shorelines. Nokai Canyon and Paiute Farms are shoreline areas that are not currently officially authorized for off-road use but are being accessed by vehicles. ORV routes in the Ferry Swale area will also be evaluated.

The plan/DEIS also will evaluate the on-road use of OHVs and street-legal ATVs on paved and unpaved GMP roads. The on-road legal use of conventional motor vehicles currently authorized on GMP roads will not be evaluated in this plan/DEIS because there would be no change in management of conventional motor vehicles on any GMP roads.

Activities beyond the scope of this plan/DEIS include a reevaluation of Glen Canyon's designated road system (e.g., opening, closing, or altering any road segments). Authorized roads for Glen Canyon are identified in the Glen Canyon GMP (NPS 1979). All roads, routes, trails, or paths in Glen Canyon not designated as open under the GMP are closed to any motorized travel. Closures are enforced under existing federal regulations. Any changes to the road network would need to be considered as part of a larger planning context. This plan/DEIS is not to be considered a travel management plan as is sometimes developed by other neighboring federal agencies.

It is beyond the scope of this document to recognize or reject Revised Statute (R.S.) 2477 assertions. This 1866 statute allowed the creation of a right-of-way across unreserved federal land without notification to or approval from the federal government as long as the requirements of the statute were met. Nothing in this document is intended to provide evidence bearing on or addressing the validity of any R.S. 2477 assertion that may be made in the future. No regulations, either to assert or recognize R.S. 2477 rights-of-way, currently exist and NPS has no policy regarding this matter. At the time of preparation of this plan/DEIS, the State of Utah and its counties have filed several lawsuits seeking to quiet title on rights-of-way that are claimed on multiple roads within Glen Canyon. To the extent that valid rights-of-way have been adjudicated or will be adjudicated in the future, they are still subject to reasonable NPS regulations concerning travel on GMP roads.

SCOPING AND PUBLIC PARTICIPATION

Public scoping began on August 31, 2007, with the publication of the notice of intent in the Federal Register (72 FR 50393–50394). The intent of public scoping was to collect public input on issues that require study and alternatives to be considered related to the management of off-road use and on-road use of non-conventional vehicles at Glen Canyon. NPS hosted three public scoping meetings in September 2007: September 5 in Escalante, Utah; September

20 in Page, Arizona; and September 24 in Monticello, Utah. Approximately 60 individuals participated in the public meetings. In addition, the public submitted comments online, via U.S. mail, and by hand-delivered comments to Glen Canyon's headquarters. NPS received a total of 2,759 comments by the close of public scoping on October 1, 2007.

NPS used public scoping to identify issues that were important to consider during the environmental analysis. Issues are defined as general questions, problems, or opportunities regarding the relationship between current and possible future actions to manage off-road and on-road use by non-conventional vehicles and the effect of these actions on natural, cultural, and socioeconomic resources. The following statements generalize the themes that were raised by NPS and other agencies, by local and state governments, and by the public during scoping:

- Off-road use and on-road use by non-conventional vehicles should be evaluated and managed in the context of the resources and values for which Glen Canyon was established.
- Rules and regulations for off-road use and on-road use of non-conventional vehicles should be clarified to provide better information and education regarding these uses, including clear identification of use areas.
- Off-road use and on-road use by non-conventional vehicles should be balanced with other recreational opportunities and should be managed in the context of local and regional recreational resources outside Glen Canyon's boundaries.
- Off-road use and on-road use by non-conventional vehicles should be managed in a manner consistent with NPS resource protection mandates.
- NPS should work closely with the public, local governments, and other state and federal agencies, and should be open and inclusive when making management decisions.

As a result of the public and agency comments received in 2007, NPS developed preliminary alternatives for managing off-road use at Glen Canyon. These preliminary alternatives were published and distributed to the public for a second public comment period in November 2010.

Seven public meetings were held in Utah and Arizona from November 1 through November 9, 2010, with the public comment period ending on November 24, 2010. At the end of the preliminary alternatives public comment period, a total of 557 pieces of correspondence were received, containing 1,858 comments. The majority of the comments received were regarding "new alternative elements," followed by "purpose and need: land management laws and executive orders," "affected environment: wilderness," and those stating support of off-road use in Glen Canyon.

IMPACT TOPICS IDENTIFIED FOR FURTHER ANALYSIS

Following internal and public scoping, the issues that were deemed pertinent to the environmental analysis were refined into impact topics. Impact topics are used to measure the degree (context, intensity, duration, and timing) to which a proposed alternative could impact natural, cultural, or socioeconomic resources, as well as visitor experience and Glen Canyon operations. These impact topics form the scientific and analytical basis for the comparison between alternatives in "Chapter 4: Environmental Consequences" and are described in detail in "Chapter 3: Affected Environment." Those impact topics determined to not have substantial consequences were dismissed from further analysis.

GEOLOGY AND SOILS

The physical impacts on desert soils at Glen Canyon 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 algal crusts], and inorganic elements [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, cyanobacterial soil crusts can account for 70% of the living soil cover. The functions of these living soil crusts include stabilizing soils, improving soil structure to increase water infiltration, and concentrating essential nutrients for vascular plant growth. Such soils are an integral part of the desert ecosystem, but they are highly susceptible to disturbance and damage by vehicles and may require hundreds of years or more for full recovery. Understanding these impacts is important because the physical and chemical properties of desert soils play a significant role in ecological processes. Because soils have the potential to be impacted by off-road use and by the adoption of the alternatives under consideration, geology and soils was carried forward for evaluation as an impact topic.

ORV Tracks at Alstrom Point

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 sagebrush. Some species, such as snakeweed, dicoria, and ragweed, have accommodated off-road use and are common throughout 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. Executive Order 13112, "Invasive Species" (1999), directs federal agencies to prevent the introduction of invasive species, and not to take actions that the agency believes are likely to cause or promote the introduction or spread of invasive species. Glen Canyon has an active and ongoing program to control invasive plant species.

Because vegetation and plant communities have the potential to be affected through the adoption of one or more of the alternatives proposed, vegetation was carried forward for analysis in this plan/DEIS.

WILDLIFE AND WILDLIFE HABITAT

NPS is directed to maintain all animals native to park ecosystems. 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 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. Because wildlife and wildlife habitat has the potential to be impacted by the adoption of the alternatives under consideration, wildlife and wildlife habitat was carried forward for analysis in this plan/DEIS.

SPECIAL-STATUS SPECIES

NPS has a positive 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. If this plan/DEIS indicates that there may be an adverse effect on any listed species, NPS will engage 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]).

Glen Canyon region is home to approximately 31 wildlife species of concern.

Pursuant to Utah Division of Wildlife Resources Administrative Rule R657-48, wildlife species that are federally listed, that are candidates for federal listing, or for which a conservation agreement is in place automatically qualify for the Utah Sensitive Species List. In addition to these species, the list includes "wildlife species of concern," which are species for which credible scientific evidence exists to substantiate a threat to continued population viability. According to Utah Division of Wildlife Resources data, the Glen Canyon region is home to approximately 31 wildlife species of concern. Because special-status species, along with threatened and endangered species, have the potential to be impacted by the adoption of the alternatives under consideration, special-status species was carried forward for analysis in this plan/DEIS.

SOUNDSCAPES

Part of the NPS mission is to preserve, to the greatest extent possible, the natural soundscape of a park, and to protect this natural soundscape from unacceptable impacts (NPS 2006a, Section 4.9). Section 8.2.3 of NPS *Management Policies 2006* directs park managers to evaluate motorized vehicle use for impacts on park resources and values, particularly the natural soundscape. Impacts related to soundscapes could occur on or near where off-road use is allowed. A wide variety of off-road use occurs at Glen Canyon, each emitting various levels of noise. Off-road use can generate noise that has the potential to impact other users in these areas, such as those camping, enjoying a picnic with their families, or participating in other activities. Such noise could also discourage wildlife from using these areas. Because soundscapes have the potential to be impacted through the adoption of one or more of the alternatives proposed in this plan/DEIS, soundscapes was considered as an impact topic.

VISITOR USE AND EXPERIENCE

Visitors at Glen Canyon

The use of motorized vehicles to reach off-road destinations around Lake Powell predates the establishment of the recreation area. 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. Today, the area is still popular with off-road enthusiasts and OHV users. Because off-road use, as well as on-road street-legal ATV use, at Glen Canyon is an integral component of the experience for some visitors, visitors may be affected by potential vehicle management actions, especially if certain restrictions or user fees are involved. While off-road use may provide a positive experience for some visitors, it can also intrude on the experiences sought by others, resulting in recreation conflict. In addition, the extent to which this use may be authorized in Glen Canyon could impact the amount and range of recreational opportunities available to visitors.

Because visitor use and experience have the potential to be impacted through the adoption of one or more of the alternatives proposed in this plan/DEIS, visitor use and experience was considered as an impact topic.

CULTURAL RESOURCES

The cultural resource management policies of NPS derive from a suite of historic preservation, environmental, and other laws, proclamations, executive orders, and regulations. Cultural resources are aspects of a cultural system that are valued by or significantly representative of a culture or that contain significant information about a culture. These resources are typically tangible entities but may include cultural practices. Cultural resources include archeological resources, cultural landscapes, historic/prehistoric structures, ethnographic resources, and museum collections (prehistoric and historic objects, artifacts, works of art, archival documents, and natural history specimens). Section 106 of the National Historic Preservation Act of 1966 (NHPA) (16 USC 470 et seq.) specifically directs each federal agency to consider the effects of their undertakings on these cultural resources eligible for or listed in the National Register of Historic Places (national register).

Due to the potential for adverse impacts on archeological and ethnographic resources through the adoption of one or more of the action alternatives, archeological and ethnographic resources have been assessed for their potential to be affected by the alternatives. The other three cultural resource categories (cultural landscapes, historic/prehistoric structures, and museum collections) have been dismissed as impact topics for reasons stated in the next section.

Archeological Resources: The Archeological Resource Protection Act of 1979 (14 USC 470bb) and NPS *Management Policies 2006* (NPS 2006a) define archeological resources as any material remains or physical evidence of past human life or activities that are of archeological interest and are capable of revealing scientific or humanistic information through archeological research. Glen Canyon is known to contain archeological resources eligible for inclusion in the national register; archeological resources do exist within the study area.

Ethnographic Resources: NPS defines "ethnographic resources" as "objects and places, including sites, structures, landscapes, and natural resources, with traditional cultural meaning and value to associated peoples" (NPS 2006a). Research and consultation with associated people identifies and explains the places and things they find culturally meaningful.

Ethnographic resources eligible for the national register are called traditional cultural properties (TCPs). TCPs are defined by NPS as "a property associated with cultural practices, beliefs, the sense of purpose, or existence of a living community that is rooted in that community's history or is important in maintaining its cultural identity and development as an ethnically distinctive people" (NPS 2006a).

Ethnographic resources exist within the study area. Ethnographic resources include archeological sites made by indigenous peoples. American Indian archeological sites known and likely to occur within the study area include Paleoindian, Archaic, Ancestral Puebloan, Paiute and Ute sites, as well as Navajo sites. The Pueblo of Zuni and the Hopi Tribe both passed resolutions declaring their relationships with the people who lived during the Paleoindian and Archaic periods. Paleoindian and Archaic period sites, therefore, become ethnographic resources. The Hopi Tribe also claims association with any Ancestral Puebloan sites. The Pueblo of Zuni claims association with Fremont Period sites. Therefore, the sites are ethnographic resources because of the significance of those sites within the cultural traditions and histories of the Hopi Tribe and Pueblo of Zuni. Any archeological sites associated with Navajo inhabitance of the area are also ethnographic resources. Any Numic or Paiute or Ute sites would similarly be regarded as ethnographic resources by contemporary Paiute and Ute tribes and bands.

Ethnographic resources that are archeological sites have been documented in association with the accessible lakeshores and within Lone Rock Beach Play Area. Cultural resources that combine the attributes of ethnographic and archeological sites have been recorded in the areas proposed for designated ORV routes at Ferry Swale. Consultation with tribes and the State Historic Preservation Officer (SHPO) are ongoing over these resources. Archeological sites have been recorded within and adjacent to the GMP roads. Some of these sites may also be ethnographic resources.

Ethnographic Resources that are or have the Potential to be Traditional Cultural Properties: Four historic properties potentially eligible to the national register as TCPs lie adjacent to, but are not within, the study area. They include (1) Rainbow Bridge within Rainbow Bridge National Monument; (2) the Colorado River inclusive of what is now Lake Powell; (3) an archeological site associated within the Wahweap governmental housing complex near the Lakeshore Drive Access Road; and (4) a location in association with the Halls Crossing Access Road. Rainbow Bridge is considered significant to the histories and on-going traditions of five tribes associated with Glen Canyon/ Rainbow Bridge National Monument. These tribes include the Kaibab Paiute Tribe, San Juan Southern Paiute Tribe, Navajo Nation, Hopi Tribe, and White Mesa Ute of the Ute Mountain Ute Tribe. The Colorado River within the jurisdiction of Glen Canyon, and adjacent to various accessible lakeshores, is regarded as a TCP by the Kaibab Band of Paiute Indians, the Navajo Nation, the Pueblo of Zuni, and the Hopi Tribe. The Colorado River has been and remains a significant place within the histories and cultures of these tribes.

One historic property potentially eligible to be a TCP is located within the study area. The Hole-in-the-Rock Road corridor 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 on-going communal identity and in their development as an ethnically distinctive group. The significance of the corridor is documented in the 2011 Programmatic Environmental Assessment for Organized Group Activities along Hole-in-the-Rock Road (NPS 2011c). In consulting on the 2011 Programmatic Environmental Assessment for Organized Group Activities along the Hole-in-the-Rock Road, the Church of Jesus Christ of Latter-day Saints community was a proponent for increased use by organized groups; they do not view pedestrian and vehicular use as having more than minor impacts.

SOCIOECONOMICS

The social and economic environment of a region is characterized by its demographic composition, the structure and size of its economy, and the types and levels of public services available to its citizens. Glen Canyon provides recreation, quality of life, and other amenities to regional visitors and residents. Glen Canyon lies in five counties: Coconino County, Arizona; and Garfield, Kane, San Juan, and Wayne Counties, Utah. NPS evaluated the socioeconomic environment in the five counties surrounding Glen Canyon and determined that the labor market for this region should include additional counties where residents live and commute to jobs in the counties that encompass Glen Canyon. The socioeconomic study area therefore includes eight counties, accounting for over 60% of the labor force for the five-county region that encompasses Glen Canyon National Recreation Area. This socioeconomic study area includes Coconino County in Arizona, as well as the following Utah counties: Garfield, Iron, Kane, San Juan, Sevier, Wayne, and Washington. These eight counties form the economic region of influence and define the geographic area in which the predominant social and economic impacts from the proposed alternatives are likely to take place.

The alternatives associated with the management of ORVs at Glen Canyon could have an impact on the socioeconomic environment of Glen Canyon 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.

The CEQ requires NPS to consider the effects of actions on the quality, growth, expansion, and use of outlying and gateway communities (40 CFR 1502.16). Because the local economy could be impacted through the adoption of one or more of the alternatives proposed in this plan/DEIS, socioeconomics is considered as an impact topic.

HEALTH AND SAFETY

CEQ regulations (40 CFR 1508.27) require NPS to consider the effects of proposed actions on visitor health and safety. NPS strives to provide a safe and healthful environment for visitors. 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 (e.g., use of conventional vehicles and ATVs together on GMP roads). Off-road use is a particular concern for visitor health and safety. ATVs in particular have been the subject of actions by the Consumer Product Safety Commission. Because health and safety of visitors and employees could be impacted through adoption of one or more of the alternatives proposed in this plan/DEIS, health and safety is considered as an impact topic.

PALEONTOLOGICAL RESOURCES

Paleontological resources (fossils, trackways, and associated data) represent a significant record of information and evidence about past life. Management of paleontological resources follows federal laws, regulations, and policies as embodied in NPS *Management Policies 2006* Section 4.8.2.1 (NPS 2006a). This section requires NPS managers to protect and preserve for educational and scientific purposes all paleontological resources, including both organic and mineralized remains in body or trace form. NPS is directed by the Paleontological Resources Preservation Act of 2009 (Title VI, PL 111-11) and 36 CFR 2, which contains penalties for those who would possess, destroy, remove, or otherwise damage 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. These include the Chinle and Morrison Formations, the Tropic Shale, and the Quaternary Deposits. The Moenkopi, Navajo, and Entrada Formations are also known to be high in tracks and traces, are subject to natural erosion and are targets for illegal collection and trade in the black market.

Because paleontological resources could be impacted (through soil erosion and/or collection) by the adoption of one or more of the alternatives proposed in this plan/DEIS, paleontological resources are considered as an impact topic.

WILDERNESS

NPS has proposed 588,855 acres or 47% of the lands in Glen Canyon as suitable for addition to the National Wilderness Preservation System and an additional 48,955 (4%) as potential wilderness (NPS 1980). The general policy of NPS is to manage all lands with wilderness characteristics, including recommended and potential wilderness areas, in expectation of eventual wilderness designation (NPS 2006a, 6.3.1). As such, management will take no action that would diminish the wilderness eligibility of these areas. Due to the proximity of unpaved GMP roads to proposed wilderness, wilderness is evaluated as an impact topic.

IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

WATER RESOURCES

An objective of the Glen Canyon GMP is "to encourage the maintenance of high water quality in all bodies and sources of water and to perpetuate the natural flow of free water" (NPS 1979). Glen Canyon accomplishes this objective through education, visitor rules, enforcement of regulations, well-maintained facilities, and an active water quality monitoring program. Under the 1996 Strategic Plan to Protect Water Quality (NPS 1996a), an agreement with the Arizona and Utah Departments of Environmental Quality, Glen Canyon monitors the public health risk to recreational users in Lake Powell by monitoring for E. coli (*Escherichia coli*), an indicator of fecal contamination. Each year, samples are collected from the lake and analyzed under a beach monitoring program. Glen Canyon maintains two laboratories that are certified as environmental testing laboratories by the Utah Department of Health. Areas that pose an unacceptable public health risk are closed to swimming. Currently, 100% of surface water resources meet state- and U.S. Environmental Protection Agency (EPA)-approved water quality standards. Human waste management has been an issue in the past; NPS has in place stringent visitor use rules to mitigate this potential problem at Glen Canyon. These use rules apply to all accessible shoreline locations in Glen Canyon.

The two potential impacts on water resources from off-road use are disturbance and pollution. Disturbance occurs as off-road use breaks down stream banks, compacts soils, and damages riparian vegetation, all of which can lead to erosion and siltation; however, no off-road use is occurring in riparian areas of Glen Canyon. Pollution may occur if motorized vehicles leak or otherwise discharge oil or gasoline, or if increased public use due to off-road access leads to problems with human waste management.

Due to the ephemeral nature of the streams in off-road use areas and the overall arid climate, disturbance and the resulting erosion has not been an identified problem at Glen Canyon. Localized events may lead to increased turbidity of lake waters, which can cause decreased sunlight penetration, temperature variations, and the introduction of sediment; however, these impacts would be short term and localized, and would not cause a threat to water quality. Because impacts on water quality in Glen Canyon from the alternatives proposed would be minimal, this impact topic was dismissed and not carried forward for analysis in this plan/DEIS.

FISH AND FISH HABITAT

As discussed above, impacts to water quality in Glen Canyon from the alternatives proposed would be minor. Therefore, it is expected that there would not be a substantial indirect impact to fish or its habitat, including species of special concern. Fish species of special concern occurring in Glen Canyon are found in the Colorado River itself and not within any of the areas considered within the scope of this plan/DEIS. Additionally, impacts to sport

fishery are not expected as a result of implementation of this plan/DEIS. As a result, this impact topic was dismissed and not carried forward for analysis in this plan/DEIS.

AIR QUALITY

The EPA, the Arizona Department of Environmental Quality, and the Utah Department of Environmental Quality regulate air quality in Glen Canyon National Recreation Area through the implementation of the Clean Air Act. The EPA has established primary and secondary National Ambient Air Quality Standards for six criteria pollutants: carbon monoxide, nitrogen dioxide, particulate matter, ozone, sulfur dioxide, and lead. In addition to the National Ambient Air Quality Standards, the Clean Air Act contains a "Prevention of Significant Deterioration" title (42 USC 7470–7492) to place ceilings on additional amounts of pollution over baseline levels based on an area's classification. The program outlines three types of airshed classification areas: Class I, Class II, and Class III. Glen Canyon is classified as a Class II area. Currently, Glen Canyon is located in a designated EPA air quality attainment area, which means air quality standards are being met. Neighboring national park units, including Capitol Reef, Canyonlands, and Grand Canyon National Parks, are Class I areas.

Off-road use can have an adverse impact on ambient air quality through its destabilizing effects on soils and through mobile source emissions. Additionally, impacts of fugitive dust due to off-road activity can be problematic.

In considering whether to analyze the impacts of each alternative on air quality in detail, NPS relied on current and predicted use numbers as well as data collected for the Cape Hatteras National Seashore Off-road Vehicle Management Plan / Environmental Impact Statement. An air quality analysis was completed at Cape Hatteras National Seashore on the impacts of conventional vehicles driving off-road. NPS air quality experts have suggested that the study is similar enough on which to reasonably rely for this plan/DEIS. The analysis demonstrated that off-road driving had minimal impact on air quality. That analysis assumed significantly more conventional vehicles driving off-road than numbers of vehicles that would be allowed to drive off-road under any of the alternatives in this plan. Additionally, almost all off-road driving at Glen Canyon involves driving to a destination and parking rather than driving and touring as is the case at Cape Hatteras National Seashore. The off-road driving/ touring at Lone Rock Beach Play Area and in the Ferry Swale area is likely so limited it will have minimal impacts on air quality.

A review of OHV use numbers for Lone Rock Beach and Lone Rock Beach Play Area over the last five years revealed numbers too low to meaningfully model. The only alternative that could see an increase in OHV use at accessible shorelines would be alternative C, because OHVs will not be permitted off-road on shorelines in the other alternatives, including no action. Though OHV use is likely to increase under alternative C, Glen Canyon does not anticipate a significant increase in OHVs driving off-road.

Dust can also be a concern with off-road driving of both conventional and non-conventional motor vehicles. One cacti species (*Pediocactus bradyi*) found in Glen Canyon is especially susceptible to dust. However, according to a recent survey, this species does not occur within any of the areas in which OHV use currently occurs or is being contemplated. Further, since off-road use under this plan would be primarily for reaching shoreline destinations and then parking, we anticipate that dust will be minimal.

On-road OHV use, both legal and illegal, is currently limited. Under several of the alternatives, including the preferred alternative, OHV use would likely increase on GMP roads, but Glen Canyon does not anticipate a huge influx in numbers so as to cause anything more than a negligible change in air quality. OHV use on GMP roads will likely be widely dispersed and infrequent as many GMP roads (particularly unpaved) are not hospitable to driving long distances using OHVs.

Finally, NPS recognizes the importance of addressing air quality long before exceeding National Ambient Air Quality Standards or endangering the Class II designation. Because of this, we have included monitoring air quality

in our monitoring and mitigation framework. If use numbers become such that we see changes to air quality, Glen Canyon will institute closures or use limitations.

CULTURAL RESOURCES

Cultural Landscapes: NPS defines "cultural landscapes" as features humans construct when inhabiting an area. They can be cattle ranches, formal gardens, and cemeteries. They reflect human adaptation and use of natural resources. The character of a cultural landscape is defined by physical materials, such as roads, buildings, walls, and vegetation, and by uses that reflect cultural values and traditions. An example of a cultural landscape in Glen Canyon is the Church of Jesus Christ of Latter-day Saints settlement at Lees Ferry/Lonely Dell National Historic District.

There are no documented cultural landscapes within the study area. However, Glen Canyon recognizes that portion of the Hole-in-the-Rock Road within Glen Canyon that extends to the Hole-in-the-Rock as an undocumented cultural landscape. The Trail and the Hole are currently listed in the national register. NPS is currently pursuing funding to document of the Hole-in-the-Rock area as a cultural landscape and TCP. This effort could be considered a potential mitigation to any effects resulting from the proposed action on the Hole-in-the-Rock Road.

Nevertheless, the impacts from the proposed alternatives to the road corridor associated with the Hole-in-the-Rock Expedition Trail would be minor. Vehicular road traffic remains on the existing road corridor. Archeological sites in association with the road corridor, and that also include historic campsites associated with the expedition, were surveyed for the 2011 Programmatic Environmental Assessment for Organized Group Activities along Hole-in-the-Rock Road (NPS 2011c). In all alternatives, impacts to archeological resources from increased vehicular and pedestrian use by organized groups would be minimal.

Historic and Prehistoric Structures: No known or documented prehistoric or historic structures exist within the study area. NPS defines a structure as those consciously created to serve some human activity (NPS 1998). An "historic structure" is generally of Euroamerican origin, but could have been created by American Indians. Historic structures can include log cabins, hogans, brush structures, other buildings, dams, canals, and fences. "Prehistoric structures" are made by American Indians and can include masonry structures built by indigenous farming communities who inhabited Glen Canyon. Although not within the study area, examples include Three Roof Ruin and Defiance House, which were built by ancestors to contemporary Puebloans.

Because no known or documented historic or prehistoric structures exist within the study area, this impact topic was dismissed and not carried forward for analysis in this plan/DEIS.

Museum Collections: As defined at 36 CFR 79, "Curation of Federally Owned and Administered Archeological Collections," and NPS *Management Policies 2006* (NPS 2006a), museum collections refer to material remains that are excavated or removed during a survey, excavation, or other study of a cultural resource, including associated records. Should the archeological inventory associated with this plan/DEIS produce collections, these collections would be deposited in an institution with adequate long-term curatorial capabilities. In this case, any collections would be accessioned into NPS museum collections. However, no artifacts were collected during archeological surveys of the study area (Bryce 2010; Caldwell 2011). Because adverse impacts on museum collections resulting from the archeological inventory of the project area would be avoided through compliance with relevant policies and guidance, this impact topic was dismissed and not carried forward for analysis in this plan/DEIS.

GEOHAZARDS

Sand deposits and landslides can threaten the safety of visitors. Active and stabilized dunes and deposits of blown sand are extensively distributed throughout Glen Canyon and can present a formidable impediment to overland travel. GMP roads have been temporarily closed due to rock slides, and roads through bentonitic clay deposits can become hazardous when wet.

The most dangerous geohazard is associated with the fall of large slabs of Wingate and Navajo Sandstone anywhere along the lake. Large slabs can be released along near-vertical joints and topple suddenly into the water. The increased risk of geological hazards related to this plan/DEIS would not be detectable. Therefore, this impact topic was dismissed and not carried forward for analysis in this plan/DEIS.

ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL

This topic involves assessing energy requirements and the potential for energy conservation associated with the various alternatives, but is most relevant to facility construction projects. Glen Canyon would continue to operate under the wise energy use guidelines and requirements stated in NPS *Management Policies 2006*; Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance" of October 5, 2009; and Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Management" of January 26, 2007.

The CEQ requires NPS to consider the impact of proposed actions on energy requirements, energy conservation, and sustainability (40 CFR 1502.16). Actions proposed under the alternatives would not have a substantial impact on energy use and conservation; therefore, this impact topic was dismissed and not carried forward for analysis in this plan/DEIS.

CLIMATE CHANGE

Climate change refers to any significant changes in average climatic conditions (such as mean temperature, precipitation, or wind) or variability (such as seasonality and storm frequency) lasting for an extended period (decades or longer). Recent reports by the U.S. Climate Change Science Program, the National Academy of Sciences, and the United Nations Intergovernmental Panel on Climate Change provide evidence that climate change is occurring as a result of rising greenhouse gas (GHG) emissions and could accelerate in the coming decades. Activities such as fossil fuel combustion, deforestation, and other changes in land use are resulting in the accumulation of trace GHGs such as water vapor, carbon dioxide, methane, nitrous oxide, ozone, and several hydrocarbons and chlorofluorocarbons.

While climate change is a global phenomenon, it manifests differently depending on regional and local factors. General changes that are expected to occur in the future as a result of climate change include hotter, drier summers; warmer winters; warmer water; higher ocean levels; more severe wildfires; degraded air quality; more heavy downpours and flooding; and increased drought. Climate change is a far-reaching, long-term issue that could affect Glen Canyon and its resources, visitors, and management. Although some effects of climate change are considered known or likely to occur, many potential impacts are unknown. Much depends on the rate at which the temperature would continue to rise and whether global GHG emissions can be reduced or mitigated. Climate change science is a rapidly advancing field and new information is being collected and released continually.

To date, no national standards have been established regarding GHG emissions, nor has the Environmental Protection Agency (EPA) established criteria or thresholds for GHG emissions applicable to transportation projects. On April 2, 2007, the Supreme Court issued a decision in Massachusetts et al. v. Environmental Protection Agency et al. 549 U.S. 497 (2007) that the EPA does have authority under the Clean Air Act to establish motor vehicle emissions standards for CO_2 emissions. In response to the Court's decision, EPA issued an endangerment

and cause or contribute finding for six GHGs under Section 202(a) of the Clean Air Act on December 7, 2009. The endangerment finding states that current and projected GHG concentrations in the atmosphere threaten the public health and welfare. The cause or contribute finding states that certain GHG emissions from motor vehicles contribute to the atmospheric concentrations of GHGs and to climate change.

NPS has released draft interim guidance on considering climate change in its NEPA process (NPS 2009a). When considering climate change, two key questions should be addressed: (1) What is the contribution of the proposed project to climate change, as indicated by GHG emissions associated with the project? and (2) What is the impact of climate change on park resources, and specifically the resources that will be impacted by the project?

On February 18, 2010, the CEQ released a draft guidance document addressing how the effects of climate change and GHG emissions should be analyzed under NEPA. The Draft Guidance addresses when and how to evaluate both the GHG emissions from proposed actions and the potential impacts of climate change on proposed actions. The Draft Guidance recommends 25,000 metric tons of direct CO_2-equivelent emissions per year as an indicator for when a quantitative GHG emissions analysis may be appropriate to include in NEPA documents. The Draft Guidance is still under review and subject to substantial change depending on the comments received.

Climate change is inherently a global issue. The sources of GHG emissions that scientists believe are causing the current change in climate are from all over the world, and climate change does not easily lend itself to an analysis at a local level. While off-road driving contributes to mobile source emissions and particulate matter, any effects of GHG emissions from the proposed alternatives on climate change would not be discernible at a regional scale. Further, nothing in NEPA explicitly requires an analysis of GHGs at the project level and no national standards have been established. This impact topic was therefore dismissed and not carried forward for analysis in this plan/DEIS.

NATURAL OR DEPLETABLE RESOURCES

Management actions proposed under the alternatives would not have detectable impacts on the long-term enhancement or productivity of the land or natural and depletable resources in Glen Canyon (per the CEQ impact requirement [40 CFR 1501.16]). Therefore, this impact topic was dismissed and not carried forward for analysis in this plan/DEIS.

FLOODPLAINS AND WETLANDS

Executive Order 11988, "Floodplain Management," requires an examination of impacts on floodplains and the potential risk involved in placing facilities in floodplains. NPS *Management Policies 2006*, Section 4.6.4, "Floodplains," and NPS Director's Order 77-2: Floodplain Management Guidelines (NPS 2006a, 2003) provide guidelines on developments proposed in floodplains. The proposed alternatives in this plan/DEIS do not consider any new development or construction in a floodplain; therefore, this impact topic was dismissed and not carried forward for analysis in this plan/DEIS.

Executive Order 11990, "Protection of Wetlands," requires federal agencies to avoid adversely affecting wetlands, where possible. NPS policies for wetlands, as stated in NPS *Management Policies 2006* and Director's Order 77-1: Wetlands Protection (NPS 2006a, 2002a), strive to prevent the loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. For regulatory purposes under the Clean Water Act, the term "wetlands" means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

Under Director's Order 77-1: Wetland Protection (NPS 2002a), NPS classifies wetlands according to the USFWS Classification of Wetlands and Deepwater Habitats of the United States, hereafter referred to as the Cowardin Classification System (Cowardin et al. 1979). Under the Cowardin Classification System wetlands have at least one of the following attributes:

- at least periodically, the habitat supports predominantly hydrophytic vegetation (wetland vegetation)
- the substrate is predominantly undrained hydric soil
- the substrate is non-soil and is saturated with water, or is covered by shallow water at some time during the growing season

The Lake Powell shoreline has at least one of these attributes, and is considered a lacustrine wetland. The boundary of the lacustrine wetland is generally decided by the location of the ordinary high water mark (or "full pool" of 3,700-foot elevation, in the case of Lake Powell). Beachfronts of lakes may be considered wetlands if they are hydrologically influenced by the normal ebb and flow of the lake's ordinary high water mark. Because the ordinary high water mark of Lake Powell is fairly static and does not change on a daily or monthly basis, the beachfront is not considered a wetland. This impact topic was therefore dismissed and not carried forward for analysis in this plan/DEIS.

ENVIRONMENTAL JUSTICE

Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low Income Populations" (1994), requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The executive order further stipulates that the agencies conduct their programs and activities in a manner that does not have the effect of excluding people from participating in, or denying people the benefits of these programs and activities, or subjecting people to discrimination because of their race, color, or national origin.

Evaluating whether a proposed action has the potential to have disproportionately high and adverse impacts on minority and/or low-income populations typically involves identifying any potential high and adverse environmental or human health impacts, identifying any minority or low-income communities in the potential high and adverse impact areas, and examining the spatial distribution of any minority or low-income communities to determine whether they would be disproportionately affected by these impacts.

Guidelines provided by the CEQ (1997) and EPA (1998) indicate that a minority community may be defined where either the minority population comprises more than 50% of the total population or the minority population of the affected area is meaningfully greater than the minority population in the general population of an appropriate benchmark region used for comparison. Minority communities may consist of a group of individuals living in geographic proximity to one another or a geographically dispersed set of individuals who experience common conditions of environmental effect. Further, a minority population exists if there is "more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds" (CEQ 1997).

The CEQ and EPA guidelines indicate that low-income populations should be identified based on the annual statistical poverty thresholds established by the U.S. Census Bureau. Like minority populations, low-income communities may consist of individuals living in geographic proximity to one another or a geographically dispersed set of individuals who would be similarly affected by the proposed action or program. The U.S. Census Bureau defines a poverty area as a census tract or other area where at least 20% of residents are below the poverty level.

There are certainly low-income and minority populations adjacent to the recreation in the study area, in particular, a significant population of American Indians due to Glen Canyon's proximity to the Navajo Indian Reservation. ORV management is not likely to disproportionately affect low income or minority populations. The accessible shorelines with the closest proximity to the Navajo Indian Reservation include Paiute Canyon, Neskahi, Copper Canyon, Nokai Canyon, and Paiute Farms, and they receive very little current use due to their remote character and poor access. Currently, Nokai Canyon and Paiute Farms are officially closed but do receive some limited use. These accessible shorelines, along with ten or six additional accessible shoreline sites would be closed under alternatives B and D, respectively. Therefore, impacts would be expected to be negligible to potential environmental justice populations and would not fall disproportionately on these populations since there is very limited use of these sites currently. Under these alternatives, closures at Lone Rock Beach and Lone Rock Beach Play Area may adversely affect the City of Page through decreased visitation and visitor spending. Since the Navajo Indian Reservation surrounds Page, it is likely that residents of the Reservation would also be adversely affected by these decreases in visitation and visitor spending. However, these impacts are not expected to disproportionately affect these populations.

Alternatives C and E would officially open Paiute Farms and Nokai Canyon accessible shorelines, which are currently closed. Additionally, ATVs would be allowed by permit at all the open accessible shorelines as well as all of those closest to the reservation under these alternatives. Fees proposed as part of ORV permits for these areas would be required. Again, a number of other accessible shoreline sites in additional to those with close proximity to the Navajo Indian Reservation would remain open under these alternatives. Impacts to potential environmental justice populations are therefore expected to be minimal and not disproportionate to these populations. Therefore, this impact topic was dismissed and not carried forward for analysis in this plan/DEIS.

Prime and Unique Agricultural Lands

Under the Farmland Protection Policy Act of 1981 NPS seeks to minimize the unnecessary or irreversible conversion of farmland to nonagricultural uses. No unique or prime farmlands exist in Glen Canyon. The proposed alternatives would not result in the conversion of farmlands. Therefore, this impact topic was dismissed and not carried forward for analysis in this plan/DEIS.

Indian Trust Resources

Indian Trust assets are assets that the United States holds and administers for Indian Tribes. The federal Indian Trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native Tribes. NPS consulted with the affiliated Tribal governments to determine whether any Trust resources could be affected by the management of off-road use at Glen Canyon. Following consultation, NPS has determined that there are no Indian Trust resources in the area that would be affected by off-road use. This impact topic was dismissed and not carried forward for analysis in this plan/DEIS.

Biospheres and Other Ecologically Critical Areas

CEQ regulations require NPS to review actions for effects on ecologically critical areas, including wild and scenic rivers and national natural landmarks, or other unique natural features as referenced in 40 CFR 1508.27. The areas of Glen Canyon that would be affected by off-road use do not contain ecologically critical areas, wild and scenic rivers, or other unique natural resources. Therefore, this impact topic was dismissed and not carried forward for analysis in this plan/DEIS.

GLEN CANYON NATIONAL RECREATION AREA MANAGEMENT AND OPERATIONS

NPS manages natural and cultural resources, public recreation, and associated facilities in Glen Canyon. The superintendent has overall authority and uses six divisions for managing the park unit: Science and Resource Management, Visitor and Resource Protection, Facility Management, Administration, Business Management, and Interpretation, Education and Partnerships. In addition to numerous other responsibilities, Glen Canyon staff are charged with enforcing closures, monitoring motorized vehicle use for general violations, and providing interpretive and educational information to visitors. Alternatives considered in this plan/DEIS could have an impact on Glen Canyon operations, including law enforcement patrols, costs and maintenance associated with infrastructure and facilities, printing costs for the publication of new route maps and brochures, and costs associated with natural and cultural resource management, mitigation, and monitoring. However, impacts associated with Glen Canyon operations are likely to be minor and have not been carried forward for analysis. Appendix B describes costs and staff operation needs for each alternative.

RELATED LAWS, POLICIES, REGULATIONS, AND PLANS

Glen Canyon as a national recreation area is managed much like any other NPS unit. For the most part, the same management policies, regulations, and laws apply at Glen Canyon as all other national park system units.

NPS operates under a number of legal and administrative authorities that guide management decisions affecting park resources and recreational opportunities. Several resource-specific laws and policies are described in the "Impact Topics Identified for Further Analysis" section. The principal laws and policies that govern the management of park units are described below. Any actions evaluated in this plan/DEIS that affect the management of Glen Canyon will be analyzed in the context of these laws, policies, and plans.

EXECUTIVE ORDERS 11644 AND 11989: OFF-ROAD VEHICLES ON PUBLIC LANDS

On February 8, 1972, President Richard Nixon issued Executive Order 11644, Use of Off-road Vehicles on the Public Lands, as amended by Executive Order 11989, to "establish policies and provide for procedures that will ensure the use of ORVs on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands."

The executive order directs agencies to develop and issue regulations and administrative instructions to designate the specific areas and trails on public lands on which off-road use may and may not be allowed. The location of off-road use areas and trails shall

- minimize damage to soil, watershed, vegetation, or other resources of the public lands
- minimize harassment of wildlife or significant disruption of wildlife habitats
- minimize conflicts between off-road use and other existing or proposed recreational uses of the same on neighboring public lands, and ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors
- ensure that areas and trails shall not be located in officially designated wilderness areas or primitive areas but shall be located in areas of the national park system, natural areas, or national wildlife refuges and game ranges only if the respective agency head determines that off-road use in such locations will not adversely affect their natural, esthetic, or scenic values.

Executive Order 11989 amended Executive Order 11644 as follows:

> Section 1. Clause (B) of Section 2 (3) of Executive Order No. 11644, setting forth an exclusion from the definition of off-road vehicles, is amended to read "(B) any fire, military, emergency or law enforcement vehicle when used for emergency purposes, and any combat or combat support vehicle when used for national defense purposes, and".
>
> Sec. 2. Add the following new Section to Executive Order No. 11644:
>
> "Sec. 9. Special Protection of the Public lands.
>
> (a) Notwithstanding the provisions of Section 3 of this Order; the respective-agency-head shall, whenever he determines that the-use of off-road vehicles will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails of the public lands immediately close such areas or trails to the type of off-road vehicle causing such effects, until such time as he determines that such adverse effects have been eliminated and that measures have been implemented to prevent future recurrence."
>
> (b) Each respective agency head is authorized to adopt the policy that portions of the public lands within his jurisdiction shall be closed to use by off-road vehicles except those areas or trails which are suitable and specifically designated as open to such use pursuant to Section 3 of this order."

CODE OF FEDERAL REGULATIONS, TITLE 36, SECTION 4.10: TRAVEL ON PARK ROADS AND DESIGNATED ROUTES

This CFR section states, "Operating a motor vehicle is prohibited except on park roads, in parking areas and on routes and areas designated for off-road motor vehicle use." Additionally, routes and areas designated for off-road use shall be promulgated as special regulations, with designations complying with Executive Order 11644 and 36 CFR 4.10. Routes and areas may be designated only in national recreation areas, national seashores, national lakeshores, and national preserves. This plan/DEIS and possible special regulation will be in compliance with 36 CFR 4.10.

NATIONAL PARKS OMNIBUS MANAGEMENT ACT OF 1998

Both the National Parks Omnibus Management Act of 1998 (16 USC 5901 et seq.) and NEPA are fundamental to NPS park management decisions. Both acts provide direction for articulating and connecting the ultimate resource management decision to the analysis of impacts, using appropriate technical and scientific information. Both also recognize that such data may not be readily available and provide options for resource impact analysis in this case.

NPS ORGANIC ACT, AS AMENDED

By enacting the Organic Act of 1916, Congress directed the U.S. Department of the Interior and NPS to manage units of the national park system "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (16 USC 1). The 1978 Redwood Amendment (see below) reiterates this mandate by stating that NPS must conduct its actions in a manner that will ensure no "derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress" (16 USC 1 a-1). Congress intended the language of the Redwood Amendment to reiterate the provisions of the Organic Act, not to create a substantively different management

standard. The House Committee report described the Redwood Amendment as a "declaration by Congress" that the promotion and regulation of the national park system is to be consistent with the Organic Act. The Senate Committee report stated that under the Redwood Amendment, "The Secretary has an absolute duty, which is not to be compromised, to fulfill the mandate of the 1916 Act to take whatever actions and seek whatever relief as will safeguard the units of the national park system." Although the Organic Act and the Redwood Amendment use different wording ("unimpaired" and "derogation") to describe what NPS must avoid, both acts define a single standard for the management of the national park system—not two different standards. For simplicity, NPS *Management Policies 2006* uses "impairment," not both statutory phrases, to refer to that single standard.

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

Pursuant to the NPS Guidance for Non-Impairment Determinations and NPS NEPA Process (NPS 2011e), a non-impairment determination for the selected alternative will be appended to the Record of Decision (ROD).

REDWOOD NATIONAL PARK EXPANSION ACT OF 1978, AS AMENDED

Reasserting the system-wide standard of protection established by Congress in the original Organic Act, the Redwood Amendment stated:

> The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress (PL 95-250, 16 USC 1a-1).

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969, AS AMENDED

NEPA is implemented through regulations of the CEQ (40 CFR 1500–1508). NPS has in turn adopted procedures to comply with NEPA and the CEQ regulations, as found in Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision Making, (NPS 2011a) and its accompanying handbook (NPS 2001). Section 102 (2)(C) of NEPA requires that an EIS be prepared for proposed major federal actions that may significantly affect the quality of the human environment.

NATIONAL HISTORIC PRESERVATION ACT OF 1966, AS AMENDED

Section 106 of this act requires federal agencies to consider the effects of their undertakings on properties listed or potentially eligible for listing in the National Register of Historic Places. All actions affecting Glen Canyon's historic, archeological, and cultural resources must comply with this legislation.

NPS *MANAGEMENT POLICIES 2006*

NPS *Management Policies 2006* addresses management of ORVs in Section 8.2.3.1, "Motorized Off-road Vehicle Use." This section (NPS 2006a, 104) states:

> Off-road motor vehicle use in national park units is governed by Executive Order 11644 (Use of Off-road Vehicles on the Public Lands, as amended by Executive Order 11989), which defines off-road vehicles 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"

(except any registered motorboat or any vehicle used for emergency purposes). Unless otherwise provided by statute, any time there is a proposal to allow a motor vehicle meeting this description to be used in a park, the provisions of the executive order must be applied.

In accordance with 36 CFR 4.10(b), routes and areas may be designated only in national recreation areas, national seashores, national lakeshores, and national preserves, and only by special regulation. In accordance with the executive order, they may be allowed only in locations where there will be no adverse impacts on the area's natural, cultural, scenic, and esthetic values, and in consideration of other existing or proposed recreational uses. The criteria for new uses, appropriate uses, and unacceptable impacts listed in Sections 8.1 and 8.2 must also be applied to determine whether off-road vehicle use may be allowed. As required by the executive order and the Organic Act, superintendents must immediately close a designated off-road vehicle route whenever the use is causing or will cause unacceptable impacts on the soil, vegetation, wildlife, wildlife habitat, or cultural and historic resources.

NPS administrative off-road motor vehicle use will be limited to what is necessary to manage the public use of designated off-road vehicle routes and areas; to conduct emergency operations; and to accomplish essential maintenance, construction, and resource protection activities that cannot be accomplished reasonably by other means.

Management policies relating to resource protection and wilderness management were considered in developing this plan/DEIS. Section 4.4.2.3 also applies, which requires protection for federal listed species and state listed species to the extent possible.

Endangered Species Act of 1973, as Amended

This act requires all federal agencies to consult with the Secretary of the Interior on all projects and proposals with the potential to impact federally endangered or threatened plants and animals. It also requires federal agencies to use their authority in furtherance of the purposes of the Endangered Species Act by carrying out programs for the conservation of endangered and threatened species. Federal agencies are also responsible for ensuring that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat.

Executive Order 13112, Invasive Species

This executive order requires NPS to prevent the introduction of invasive species, to provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause.

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds

Migratory birds are of great ecological and economic value to this country and to other countries. They contribute to biological diversity and bring tremendous enjoyment to millions of people who study, watch, feed, or hunt these birds throughout the United States and other countries. The United States has recognized the critical importance of this shared resource by ratifying international, bilateral conventions for the conservation of migratory birds. Such conventions include the Convention for the Protection of Migratory Birds—Great Britain on behalf of Canada 1916, the Convention for the Protection of Migratory Birds and Game Mammals—Mexico 1936, the Convention for the Protection of Birds and Their Environment—Japan 1972, and the Convention for the Conservation of Migratory Birds and Their Environment—Union of Soviet Socialist Republics 1978. These migratory bird

conventions impose substantive obligations on the United States for the conservation of migratory birds and their habitats, and through the Migratory Bird Treaty Act, the United States has implemented these migratory bird conventions with respect to the United States. This executive order directs executive departments and agencies to take certain actions to further implement the Migratory Bird Treaty Act.

NPS Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision Making and Handbook

Director's Order 12 (NPS 2011a) and its accompanying handbook (NPS 2001) lay the groundwork for how NPS complies with NEPA. Director's Order 12 and handbook set forth a planning process for incorporating scientific and technical information and establishing a solid administrative record for NPS projects. Director's Order 12 requires that impacts to park resources be analyzed in terms of their context, duration, and intensity. It is crucial for the public and decision makers to understand the implications of those impacts in the short and long term, cumulatively, and within context, based on an understanding and interpretation by resource professionals and specialists.

Director's Order 28: Cultural Resource Management

Director's Order 28 sets forth the guidelines for management of cultural resources, including cultural landscapes, archeological resources, historic and prehistoric structures, museum objects, and ethnographic resources. This order calls for NPS to protect and manage cultural resources in its custody through effective research, planning, and stewardship in accordance with the policies and principles contained in NPS *Management Policies 2006*.

Director's Order 77: Natural Resource Protection

Director's Order 77 (NPS 1991a) addresses natural resource protection, with specific guidance provided in Reference Manual 77: Natural Resource Management (NPS 1991b). The reference manual offers comprehensive guidance to NPS employees responsible for managing, conserving, and protecting the natural resources found in national park system units. The reference manual serves as the primary guidance on natural resource management in units of the national park system. Reference manual chapters that are particularly relevant to this plan/DEIS include endangered, threatened, and rare species management; geologic resources management; native animal management; shoreline management; vegetation management; special use permitting; wetland protection (Director's Order 77-1); and floodplain management (Director's Order 77-2).

RELATED PLANS AND POLICIES FOR GLEN CANYON NATIONAL RECREATION AREA

Glen Canyon National Recreation Area General Management Plan (1979)

The GMP for Glen Canyon National Recreation Area was adopted in 1979. The GMP evaluated the enabling legislation and specifically looked at constraints on and obligations for the management and use of Glen Canyon. The GMP identified four management zones and identified management strategies for resource protection and visitor use in these zones. The GMP also identified roads that would remain open for public use and travel. The GMP was completed after extensive public involvement, with an administrative record that includes 827 pages of transcripts and 1,581 written comments received.

GLEN CANYON WILDERNESS RECOMMENDATION (1980)

NPS recommended the designation of 588,855 acres within Glen Canyon as wilderness by an act of Congress (NPS 1980). The recommendation was based upon careful studies of the roadless areas, management considerations, the views presented at public hearings, and written responses received on the preliminary environmental assessment on the wilderness study report; the draft environmental statement on the preliminary wilderness proposal and alternatives; and the final environmental statement on the wilderness recommendation and alternatives.

GLEN CANYON DEVELOPMENT CONCEPT PLANS / ENVIRONMENTAL ASSESSMENTS

Environmental Assessment / Development Concept Plan for Lone Rock Beach (1981)

An environmental assessment and management / development concept plan (EA/DCP) was written to provide site-specific guidance for the management of Lone Rock Beach (NPS 1981). The 1981 Environmental Assessment / Development Concept Plan for Lone Rock Beach (Lone Rock EA/DCP) provided management actions and visitor facilities for a more controlled and maintainable type of recreational use of the beach. The Lone Rock EA/DCP also designated a distinct 180-acre ORV high-intensity use area that runs contiguous to the Lone Rock Beach shoreline. This area designated for off-road use is the only location in Glen Canyon where ATVs are allowed to operate. A finding of no significant impact (FONSI) on the EA/DCP was signed on August 31, 1981.

Paiute Farms/San Juan Marina Development Concept Plan Environmental Assessment (1986)

A development concept plan / environmental assessment (DCP/EA) was written to provide site-specific guidance for the development of an interim facility for the San Juan Marina at Paiute Farms while the development of a permanent site was being planned and the feasibility of a permanent road to the site determined (Utah Navajo Industries 1986).

Environmental Assessment and Management / Development Concept Plans for Lake Powell's Accessible Shoreline (1988)

The guiding document for management of Lake Powell's 20 accessible shoreline areas is the Environmental Assessment and Management / Development Concept Plans for Lake Powell's Accessible Shorelines (NPS 1988). The purpose of the EA/DCP was to manage Lake Powell's shorelines to reduce resource degradation, visitor use conflicts, and safety hazards at 20 shoreline sites with road access. A majority of Lake Powell's 1,960 miles of shoreline (at full pool) consist of sandstone cliffs or rockslide areas that are not accessible by road. The 20 shoreline sites that are accessible by road were identified in the Glen Canyon 1979 GMP. The Accessible Shoreline EA/DCP tiered from the GMP to provide site-specific management strategies for the accessible shorelines. Twelve of the 20 accessible shoreline sites were developed to provide for off-road driving. A FONSI on the EA/DCP was signed on November 3, 1988.

The fluctuating levels of Lake Powell have significantly affected use of and access to many shoreline sites currently designated as open to vehicles. As a result, three of the shoreline areas – Warm Creek, Crosby Canyon, and Bullfrog North and South – are currently closed to the public through the Superintendent's Compendium (NPS 2013a).

Antelope Point Marina and Resort Development Concept Plan/Environmental Assessment (2002).

The Antelope Point Marina and Resort DCP/EA (NPS and Navajo Nation 2002) examined the proposed development of the Antelope Point Marina to include under the preferred alternative a floating marina village and boat docks, dry storage for boats, campground and RV park, resort hotel and cultural center, optional employee housing, and supporting infrastructure. The Antelope Holdings, LLC, formerly known as G.M.F. Antelope, LLC, was selected by the Navajo Nation and NPS to develop and operate this resort and marina.

Lees Ferry Area Improvements Final Environmental Assessment/Assessment of Effect (2006)

The environmental assessment/assessment of effect was prepared in response to the need to undertake a variety of tasks designed to improve visitor use and satisfaction at the Lees Ferry Developed Area of Glen Canyon National Recreation Area (NPS 2006d). The action alternative included replacement of a variety of utilities and facilities as well as stabilization of the bridge over the Paria River and the access road to Lonely Dell Ranch and the installation of a radio repeater to improve health and safety of visitors and staff.

Development Concept Plan and Environmental Assessment (2006)

The 2006 Uplake DPC/EA included proposed management action for three areas: Hite, Halls Crossing, and Bullfrog (NPS 2006b; 2006c). The overall purpose of the Uplake DCP was to evaluate a range of alternatives for the future management of the uplake marinas and associated developed areas at Bullfrog, Halls Crossing, and Hite to ensure the protection of Glen Canyon resources and values while offering recreation opportunities as provided for in the Glen Canyon's enabling legislation, purpose, mission, and goals.

Uplake Development Concept Plan / Environmental Assessment (2008)

The 2008 Uplake DCP/EA addressed issues related to the addition and management of floating facilities at Bullfrog and Halls Crossing and the possibility of a primitive type launch ramp at Farley Canyon (NPS 2008e, 2009c). This DCP/EA was an update to the previous Uplake DCP, which was completed in 2006.

Resources Management Plan, Cultural Component, Glen Canyon National Recreation Area (1987)

The Cultural Resources Management Plan (CRMP) (NPS 1987b) provides detailed information on how NPS personnel will carry out the programmatic responsibilities outlined in Director's Order 28. These responsibilities include research to identify, evaluate, and interpret the cultural resources at the recreation area. The CRMP also provides a means to integrate cultural resources management issues into recreation area planning.

CANYONLANDS NATIONAL PARK AND ORANGE CLIFFS UNIT OF GLEN CANYON NATIONAL RECREATION AREA BACKCOUNTRY MANAGEMENT PLAN / ENVIRONMENTAL ASSESSMENT (1995/1993)

The Canyonlands National Park and Orange Cliffs Unit of Glen Canyon National Recreation Area Backcountry Management Plan (NPS 1995) and the accompanying environmental assessment (NPS 1993) is an interpark management plan developed to increase consistency and protection for visitors to both the Maze District of Canyonlands and the Orange Cliffs in Glen Canyon. The goal of the backcountry management plan is to protect resources, while providing for high-quality visitor experiences. The Orange Cliffs Special Management Unit (Orange Cliffs Unit) of Glen Canyon adjoins Canyonlands National Park, is similar in physiography, and has many of the same management issues as the Canyonlands Maze District.

Orange Cliffs

The backcountry management plan was predicated on the Glen Canyon GMP, which states that the Orange Cliffs Special Management Unit is to be "maintained as a critical backdrop for Canyonlands National Park and as a major vantage point for spectacular views into the park." The Orange Cliffs Unit is managed "to maintain a relatively primitive, undeveloped atmosphere" and to provide "year-round access to Panorama Point" (NPS 1979).

The backcountry management plan will be used to ensure that the alternatives identified in this plan/DEIS are consistent with the backcountry management plan and do not compromise the purpose or significance of the Orange Cliffs Unit of Glen Canyon or the Maze District of Canyonlands National Park.

GRAZING COMPONENT OF THE GENERAL MANAGEMENT PLAN (1999)

The Grazing Component of the GMP (NPS 1999a) was prepared to further define the grazing resources component of the GMP for Glen Canyon. The plan is composed of several elements: (1) description of the existing resources protection and grazing administration responsibilities of NPS and BLM; (2) an assessment of the current range condition by resource; (3) goals, objectives, and recommendations for grazing practices and management actions; and (4) maximum grazing intensities (utilization) compatible with the purpose of the recreation area. The grazing component was analyzed in an environmental assessment and complied with the GMP. The grazing component fits within the purpose and intent of the enabling legislation for Glen Canyon.

GLEN CANYON NATIONAL RECREATION AREA, ARCHEOLOGICAL RESOURCES PROTECTION PLAN (2002)

This resources protection plan (NPS 2002b) targets archeological sites including cliff dwellings, granaries, open habitation sites, lithic and ceramic scatters, and rock art panels. All of these site types are prehistoric reflecting Native American occupation of the Glen Canyon area over the last 10,000 years. The plan echoes some of the information found in the CRMP but identifies and outlines programs and procedures directed specifically at the archeological resource base.

PERSONAL WATERCRAFT EIS (2003)

NPS prepared an EIS that evaluated a range of alternatives and strategies for the management of personal watercraft use at Glen Canyon. The goal is to ensure the protection of Glen Canyon resources and values while offering recreational opportunities as provided for in the recreation area's enabling legislation, purpose, mission and goals. Upon completion of this process in accordance with NEPA, NPS took action to adopt special regulations to manage personal watercraft use at Glen Canyon.

OHV INTERIM MANAGEMENT PLANS AT LONE ROCK BEACH AND AT ACCESSIBLE SHORELINES (2007)

Currently, Glen Canyon has in place interim management plans to continue the management of off-road use at Lone Rock Beach and Lone Rock Beach Play Area(NPS 2007h), and at the accessible shorelines (NPS 2007i), with the exception of Paiute Farms and Nokai Canyon. This new ORV management plan will supersede all prior ORV management plans.

GARFIELD COUNTY GENERAL MANAGEMENT PLAN RESOURCE MANAGEMENT SECTION (2007)

Garfield County includes more than 300,000 acres of Glen Canyon within its boundaries. The plan (Garfield County 2007) puts forth the need for collaborative OHV management activities between the county and Glen Canyon to be analyzed and developed including but not limited to use of existing roads and trails, development of an OHV play area in the Bullfrog region, trail head construction, designation of OHV open areas, and necessary law enforcement and educational activities. It is the county's desire to work cooperatively with Glen Canyon to develop a balanced recreation and management plan that considers wilderness, semi-primitive uses, OHV play areas, OHV routing system, semi-developed primitive campgrounds, and shoreline/Lake Powell management. The county also desires to jointly develop with Glen Canyon a methodology for managing OHV use and the criteria for designating and managing routes for OHV travel and OHV open areas.

SAN JUAN COUNTY TRAVEL PLAN (2013)

The Travel Plan is incorporated as part of San Juan County's Master Plan. Motorized travel on roads in the County is critical to San Juan County's economy and the livelihood of County residents. The Travel Plan outlines roads and trails that provide a myriad of recreational opportunities to those who live in and visit the County.

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR ORGANIZED GROUP ACTIVITIES ALONG HOLE-IN-THE-ROCK ROAD (2012)

The Programmatic EA for Special Recreation Permits for Organized Use along Hole-in-the-Rock Road was prepared by the BLM and NPS to consider increasing the maximum group size for noncommercial educational and heritage-focused groups on the Hole in the Rock Road within the Grand Staircase Escalante National Monument and Glen Canyon. NPS signed a FONSI and Determination of No Impairment on April 6, 2012 to adopt the selected action as described in the final Hole-in-the-Rock EA. The Hole-in-the-Rock EA analyzed the effects of large organized group activities along the Hole-in-the-Rock Road on national park resources and values within Glen Canyon. The EA also analyzed environmental effects of such activities on the natural and cultural resources within Grand Staircase Escalante National Monument. The FONSI approves group use limits up to 145 people at one time with a maximum of 29 vehicles. The maximum length of stay is 3 days / 2 nights (groups) and 12 days (equestrian and reenactments). No more than one NPS permit would be issued at a time to minimize the potential for user conflicts and resource damage. No permits would be issued during the Memorial Day, July 4, and Labor Day holiday weekends.

SUPERINTENDENT'S COMPENDIUM (2013)

Under the provisions of 16 USC, Section 3 and 36 CFR 1, the compendium designates closures, permit requirements, and other restrictions imposed under the discretionary authority of the Superintendent for Glen Canyon National Recreation Area (NPS 2013a). Regulations listed in the compendium are a requirement in addition to those listed in Parts 1-7 of Title 36 unless otherwise noted. In addition to the compendium regulations, written determinations, which explain the reasoning behind the superintendent's use of discretionary authority, are required by 36 CFR 1.5 (c) and appear in the document as italicized print or are available for review in the Chief Ranger's Office. Regulations in the Compendium that are related to off-road use define areas where ORVs may be used, and provide the authority for area closures. These regulations include the following:

- Section 1.5: Closures and public use limits.
- Section 1.6(f): Activities requiring a permit.
- Section 2.10 (a): Camping conditions and permits.
- Section 4: Vehicles and traffic safety.