



## **Lees Ferry Road Rehabilitation and Paria River Bridge Stabilization FINDING OF NO SIGNIFICANT IMPACT**

The National Park Service, Glen Canyon National Recreation Area, in cooperation with the Federal Highway Administration, Central Federal Lands Highway Division, proposes to restore, rehabilitate, and repave the 6-mile-long Lees Ferry Road to near the confluence of the Paria River and Colorado River. This project in Coconino County, Arizona, will enhance safety; improve road drainage; improve and add vehicle pullouts to enhance safety; reduce erosion; and stabilize the banks near the Paria River Bridge, along the west bank of the Paria River, and along portions of No Name Wash and Cathedral Wash. The project is needed because conditions along the Lees Ferry Road need to be improved, and because riverbank erosion threatens to undermine the Paria River Bridge and Lonely Dell Access Road. The project would enhance safety for all vehicle occupants, protect infrastructure of the Lees Ferry Road and Lonely Dell Access Road, and implement drainage improvement and erosion control measures that would reduce maintenance needs. The project would also protect the Paria River Bridge infrastructure.

This document records:

- A finding of no significant impact as required by the National Environmental Policy Act of 1969 and
- A determination of no impairment as required by the National Park Service Organic Act of 1916. The non-impairment findings can be found in the appendix to this finding of no significant impact.

### **SELECTED ACTION**

Alternative B is the preferred alternative and the National Park Service's selected action because it best meets the purpose and need for the project as well as the project objectives. The project will enhance safety for all vehicle occupants, protect infrastructure of the Lees Ferry Road and Lonely Dell Access Road, and implement drainage improvement and erosion control measures that will reduce maintenance needs. The project will also protect the Paria River Bridge infrastructure. The project will be considered successful if it meets the following objectives:

- Provide functional and enduring road infrastructure.
- Lane widths along the Lees Ferry Road are consistent.
- Road surface undulations and shoulder degradations along Lees Ferry Road are corrected.
- Maintenance needs are reduced and roadside and cross-road drainage is more efficient.
- Erosion along the banks of the Paria River near the bridge and in the riverbed under the bridge is reduced to protect the bridge abutments and minimize the potential for pier failure.
- The Lonely Dell Access Road is protected from erosion where the Paria River is eroding the bank supporting the road.
- Erosion along Cathedral Wash and No Name Wash is reduced to protect Lees Ferry Road.

## **MITIGATING MEASURES**

Mitigation measures and guidelines have been developed as part of implementing the selected action. These measures and guidelines are provided at the end of this document and are specific to the project area and to the resource issues analyzed in the environmental assessment.

## **ALTERNATIVES CONSIDERED**

One other alternative was considered:

- Alternative A, the no action alternative, would continue current management and conditions on the Lees Ferry Road and along the banks of the Paria River. Current conditions along the Lees Ferry Road require a high level of maintenance because of the degradation of the road shoulders caused by heavy trucks, trailers, and bus traffic. In addition road drainage structures are often overwhelmed by infrequent but heavy rainfall. Inadequate drainage systems and insufficient erosion control would continue to pose road maintenance problems at multiple locations along the Lees Ferry Road. The banks of the Paria River upstream from the Paria River Bridge are experiencing serious erosion. River bank erosion along the northern bank threatens to undermine the Lonely Dell Access Road. The Paria River Bridge is at risk from erosion of the river bank on the east side of the bridge.

## **ENVIRONMENTALLY PREFERABLE ALTERNATIVE**

According to the U.S. Department of the Interior regulations in 43 *Code of Federal Regulations* section 46.30 that implement the National Environmental Policy Act, the environmentally preferable alternative "causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources."

Alternative B is the environmentally preferable alternative for several reasons. It will reduce the potential for continued erosion of the Paria River banks upstream of the bridge and below the Lonely Dell Access Road. Erosion control will also be implemented along Cathedral Wash and No Name Wash. Visitors and staff could continue to use and enjoy the Lees Ferry Road and the attractions it leads to because safety will be enhanced under alternative B. There will be less likelihood of road closures associated with extreme precipitation events as a result of enhanced drainage features. Short-term adverse impacts to natural resources as a consequence of construction activities will be outweighed by the beneficial effects and resource protections afforded by alternative B.

Alternative A is not the environmentally preferable alternative for a number of reasons. Channel and river bank erosion along the Paria River would continue as a result of storm flow events, with the highest velocities occurring at the bridge. In addition to threatening the road and bridge, erosion and sediment transport would result in increased sediment flowing into the Paria River and continued degradation of the Paria River banks. Alternative A would also continue to impede access to the natural recreation area resources, and would maintain the current road conditions that affect commercial buses and vehicles towing long, heavy trailers.

## **WHY THE SELECTED ACTION WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT**

As defined in 40 *Code of Federal Regulations*, Section 1508.27, significance is determined by examining the following criteria:

***Impacts that may be both beneficial and adverse. A significant effect may exist even if the agency believes that on balance the effect will be beneficial.***

Following rehabilitation of the Lees Ferry Road and stabilization of the Paria River banks, moderate, beneficial impacts on health and safety and park operations will occur as safety on the road will be enhanced and maintenance needs along the road corridor will be reduced.

All other impacts will have intensities that are minor or less. These impact topics include water resources and hydrology; wetlands and waters of the United States; floodplains; soils; vegetation; special status species; and cultural resources (historic structures, archeological resources, and ethnographic resources). The mitigation measures listed later in this document will help ensure that the intensities of the adverse impacts do not exceed the above-stated levels. Impacts of other alternatives varied and are described in the environmental assessment.

***Degree of effect on public health or safety.***

Public health and safety on the Lees Ferry Road will be improved by widening the radii of the curves, providing consistent lane widths, and rebuilding and repaving the road. Measures to reduce erosion along the Paria River banks will improve the stability of the Paria River Bridge as well as reduce the potential damaging erosion of the riverbank where it runs along the Lonely Dell Road. Measures to reduce erosion along the LF road and improve the passage of storm water at No Name Wash and Cathedral Washes will reduce the necessity to close the road, clear debris, and perform maintenance.. Drainage improvements will substantially reduce erosion, decrease stormwater flows that currently inundate portions of the road, and leave less sediment deposits on the road. As a result, the selected action will have long-term, minor to moderate beneficial effects on public health and safety.

***Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.***

Impacts on cultural resources, as documented in the environmental assessment, will be negligible for historic structures, long-term and minor for archeological resources, and short- and long-term and negligible to minor for ethnographic resources.

Effects on park lands are described in detail in the environmental assessment; no impacts on park lands that are greater than minor will occur.

Limited wetland impacts will occur. Because of the ephemeral nature of area wetlands, the small area affected at each individual project site, the very low to absent functional values of affected wetlands, and the best management practices and other mitigation that will be employed for construction and restoration, the short-term, adverse impacts on wetlands will be of minor intensity, and long-term impacts will be negligible.

No wild and scenic rivers will be affected by the selected action.

No prime farmlands or ecologically critical areas will be affected by the selected action.

***Degree to which effects on the quality of the human environment are likely to be highly controversial.***

Throughout the environmental assessment process, the proposal to rehabilitate the Lees Ferry Road and stabilize the Paria River banks in select locations was not environmentally controversial. The methods proposed to achieve the erosion control and bank stabilization are proven and their effectiveness has a high likelihood of success.

***Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks.***

No highly uncertain effects or unique or unknown risks are anticipated to occur with implementation of the selected action. This action will enhance safety on the Lees Ferry Road by providing consistent lane widths, correcting road surface undulations and road shoulder degradation, and improving the efficiency of cross-road and roadside drainage. This action will also address erosion concerns at the Paria River Bridge, No Name Wash, Cathedral Wash, and other locations. The selected action involves the use of proven techniques and approaches. Standard construction and operation techniques, best management practices, and other mitigation will minimize risks.

***Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.***

Rehabilitation of the Lees Ferry Road and the Paria River Bridge stabilization will not result in significant adverse effects to the natural environment, cultural resources, or visitor experience because the project was designed to minimize resource and visitor impacts and mitigation measures were incorporated into the project to further reduce identified adverse effects. In addition, the selected action will provide for the long-term protection of resources and will not set a precedent for future actions with significant effects. It also does not represent a decision in principle about any future consideration in Glen Canyon National Recreation Area or elsewhere in the national park system.

***Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.***

The environmental assessment concluded that past, present, and future activities, when coupled with the proposed project, will produce incremental effects ranging from negligible to moderate, depending on the resource topic. The proposed action will produce minor to modest beneficial cumulative effects to park operations and public health and safety. Negligible adverse cumulative effects will occur for water resources, hydrology, and floodplains. Negligible to minor adverse cumulative effects will occur to wetlands, soils, and vegetation. Minor to negligible beneficial cumulative effects are anticipated for special status species. The historic, ethnographic, and archeological aspects of cultural resources will experience either no effect or negligible to minor adverse cumulative effects. As is explained in the environmental assessment, overall, this action will not result in any significant cumulative effects.

***Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.***

Although the selected action will result in construction activities within the boundaries of the Lees Ferry and Lonely Dell Ranch Historic District, none of these activities will directly impact any contributing elements of the historic district. The project is at the southern and western edges of the historic district in areas that only contain non-contributing elements such as the modern NPS maintenance area. As such, historic structures will be unaffected and the selected action will have negligible impacts to historic structures.

The cultural landscape will be impacted by the introduction of modern elements within the identified cultural landscape. However, the 2010 cultural landscapes inventory notes that the existing landscape has previously been subjected to the construction of modern NPS facilities. Therefore, the visual impacts resulting from the new structures will be minimal because of prior construction of many other non-historic elements throughout the Lees Ferry and Lonely Dell Ranch cultural landscape. The spatial organization of historic ranching and ferry operation elements will remain unchanged and will

continue to demonstrate to an observer the link between the existing landscape and the earlier historic period.

The selected action will include ground disturbance along the edges of the existing road, as well as excavations along the Paria River for installation of gabions and a revet mattress. The road corridor was previously disturbed during original construction, and areas of potential excavation along the Paria River have been surveyed for archeological resources. Most ground disturbance under the selected action will occur in corridors of previous disturbance and/or in areas that have been previously surveyed.

Although excavations in previously disturbed or surveyed areas are unlikely to encounter archeological resources, an archeological monitor will be present during all ground-disturbing activities near known archeological resources. In the unlikely event that national register-eligible archeological resources were discovered and could not be avoided, such as by relocating a gabion, an appropriate mitigation strategy will be developed in consultation with the State Historic Preservation Officer and, if necessary, associated American Indian tribes, as per the inadvertent discovery plan.

The selected action will include construction activities with the potential to affect ethnographic resources. Although there are no elements of the selected action that will cause impacts to the ethnographically associated Church of Jesus Christ of Latter-day Saints or rancher communities, ethnographic ties with the associated American Indian tribes could be impacted. These tribes have ethnographic ties to the land within the project area due to the potential existence of archeological resources. These impacts are discussed in the environmental assessment's archeological resources analysis, and will be long-term, minor, and adverse.

In addition, three plants with ethnographic significance to Native Americans may be found along the road. Marble Canyon spurge and Mojave indigobush are Navajo National Species of Concern, and nakedstem sunray is considered a culturally important plant by the Navajo Nation. None of these plants is a federally listed species and no critical habitat has been designated. Additional mitigation measures for these individual species are included in the Errata.

Any removal or damage of these plants during construction could have short-term impacts on ethnographic resources. The intensity will be negligible because the plants of concern grow in nearby areas. Impacts of the selected action on ethnographic resources will be short- and long-term, negligible to minor, and adverse.

After applying the Advisory Council on Historic Preservation's (2004) criteria of adverse effect, the National Park Service concludes that the selected action will result in a determination of *no adverse effect* with regard to historic structures, cultural landscapes, archeological resources, and ethnographic resources. State Historic Preservation Officer concurrence with the determination of *no adverse effect* was received on September 26, 2012.

***Degree to which the action may adversely affect an endangered or threatened species or its critical habitat.***

During construction, short-term adverse impacts up to minor intensity will occur on the Brady pincushion cactus because of potential access for illegal collection, to razorback sucker habitat because of increased sediment loading to the river, and to desert bighorn sheep because of increased human activity. All other short- and long-term impacts on special status species or their habitats will be negligible. Mitigation measures listed in the environmental assessment and repeated in this document will be implemented to protect special status species. There would be no effect to designated critical habitats of the California condor, southwestern willow flycatcher, and Mexican spotted owl as a result of the proposed action. Designated critical habitat for the razorback sucker may be affected by short-term increases of water turbidity, but this effect would be unlikely to adversely affect its critical habitat.

The U.S. Fish and Wildlife Service, as identified in their response dated September 24, 2012, concurred with the determination of no effect for the Navajo sedge (*Carex specuicola*), Jones cycladenia (*Cycladenia humilis* var. *jonesii*), Colorado pikeminnow (*Ptychocheilus lucius*), bonytail chub (*Gila elegans*), and humpback chub (*Gila cypha*) and may affect, not likely to adversely affect for the Brady pincushion cactus (*Pediocactus bradyi*), razorback sucker (*Xyrauchen texanus*) and its critical habitat, California condor (*Gymnogyps californianus*), Mexican spotted owl (*Strix occidentalis lucida*), and southwestern flycatcher (*Empidonax traillii extimus*).

***Whether the action threatens a violation of federal, state, or local environmental protection law.***

This action does not threaten a violation of any federal, state, or local environmental protection law.

**PUBLIC INVOLVEMENT**

The following actions were taken to inform the public about the intent to prepare a National Environmental Policy Act environmental assessment on the Lees Ferry Road rehabilitation and Paria River Bridge stabilization project. The scoping period was from August 26, 2011 through September 26, 2011.

A public notice and press release were published on August 23, 2011.

Scoping letters or notices were sent to approximately 360 people and organizations on the national recreation area's core mailing list. These included local, tribal, state, and federal agencies; organizations; and individuals.

The scoping notice was made available electronically on the National Park Service Planning, Environment, and Public Comment website at <http://parkplanning.nps.gov/GLCA>.

Public scoping produced six responses, as follows.

- The Arizona Ecological Services Office of the U.S. Fish and Wildlife Service confirmed the special status species that would be evaluated in the environmental and biological assessments and recommended that the National Park Service also contact the Arizona Game and Fish Department and any affected tribes.
- The Arizona Game and Fish Department identified the special status species known to occur within a 3-mile radius of the project and indicated that it does not anticipate any significant adverse impacts to wildlife resources as a result of the project.
- The Church of Jesus Christ of Latter-day Saints responded with an email request to be included in the compliance process as a consulting party for the section 106 review of the project. The response also included a request for a copy of the cultural sites inventory report when it is completed.
- The Hopi Tribe responded with a request for a copy of the cultural sites inventory report when it is completed and to be consulted if any cultural resources are discovered or adversely affected by the project.
- The Navajo Nation concluded that there would likely not be any impacts to Navajo traditional cultural resources. If, however, habitation sites, plant gathering areas, human remains, or objects of cultural patrimony were discovered during the project, they requested to be notified and for actions to be taken, as appropriate, in accordance with the Native American Graves Protection and Repatriation Act.
- Two responses came from members of the public, including a Grand Canyon National Park employee and an unnamed, unaffiliated individual from Lubbock, Texas. One comment provided concern and recommendations for best management practices to control and

minimize invasive species. The other comment questioned whether gabions would be the best way to stabilize the banks with regard to aquatic wildlife.

The environmental assessment was distributed for public review on July 17, 2012. Comments were accepted through August 16, 2012. During the public review period, one public (but non-substantive) comment was received.

The Church of Jesus Christ of Latter-day Saints provided a letter noting typographic errors (corrected in the errata accompanying the Finding of No Significant Impact) and a request that impacts (or a lack of) to cultural resources be included in the rationale for selecting Alternative B as the environmentally preferable alternative. The National Park Service concurs and edited the environmentally preferable alternative text to include reference to cultural resources as noted in the errata.

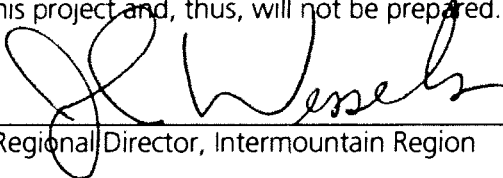
These concerns did not result in any changes to the analysis of the environmental assessment but are addressed as text changes in errata sheets attached to this document. This finding of no significant impact and the errata sheets will be sent to all commentors.

## CONCLUSION

As described above, the selected action does not constitute an action meeting the criteria that normally require preparation of an environmental impact statement. The selected action will not have a significant effect on the human environment. Environmental impacts that could occur are limited in context and intensity, with generally adverse impacts that range from localized to widespread, short- to long-term, and negligible to moderate. There are no unmitigated adverse effects on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local environmental protection law.

Based on the foregoing, it has been determined that an environmental impact statement is not required for this project and, thus, will not be prepared.

Approved:

  
Regional Director, Intermountain Region

10/26/12  
Date

## MITIGATION MEASURES INCLUDED AS PART OF THE SELECTED ACTION

Table 1, with minor revisions, lists the mitigation measures that are presented in the environmental assessment organized by impact topic and identifies the organization or agency responsible for implementing the mitigation measure.

**Table 1: Mitigation Measures for Each Impact Topic and Responsible Organization**

Mitigation Measure	Responsible Organization
<b>Soils</b>	
Work only on the road prism for most of the project. Delineate those construction areas outside the existing road bench using fencing or other highly visible means to prevent impacts on resources outside the approved construction boundaries.	Federal Highway Administration (FHWA), construction contractor
Whenever possible, schedule construction during dry periods and when surface and ground water levels are low to minimize soil compaction.	Construction contractor
Pile the top 6 inches of soil adjacent to the road away from the pavement and then spread it back once paving is completed in the area.	Construction contractor
Inspect equipment for leaks of oil, fuels, or hydraulic fluids before and during use to prevent soil and water contamination. Require contractors to have and implement a plan to promptly clean up any leakage or accidental spills from equipment, such as hydraulic fluid, oil, fuel, or antifreeze.	FHWA, construction contractor
Use erosion control best management practices to minimize soil erosion at all project sites. These could include, but may not be limited to, silt fences, sediment traps, erosion check screens and filters, jute mesh, and hydromulch.	FHWA, construction contractor
Where appropriate, use materials such as weed-free straw bales, fabric barriers, and sandbags to prevent soil and debris from entering drainage inlet areas.	FHWA, construction contractor
Maximize the use of previously disturbed areas for staging and stockpile areas to minimize ground disturbance.	FHWA, construction contractor
Require dust control during construction using methods such as watering, covering haul loads, and controlling vehicle speeds.	FHWA, NPS
Obtain any fill materials from a source approved by the national recreation area ecologist or other recognized expert.	FHWA, construction contractor, NPS
Maximize use of excess excavated soil within the larger project area. Excess excavated soil will be used as fill to minimize impacts whenever possible.	FHWA, construction contractor
<b>Vegetation</b>	
Prior to construction, develop a project revegetation plan. The plan should include, but not be limited to, the use of native species (preferably from the same gene pool), native seed/plant mixes, mulching, plant salvage potential, exotic vegetation control, monitoring to ensure successful recovery, and actions to be taken if monitoring indicates problems. Include reconstruction of the natural spacing, abundance, and diversity of native plant species.	NPS
Ensure that there will be no irrigation needs beyond plant establishment whenever possible.	NPS
In establishing construction boundaries, minimize impacts on vegetation by avoiding shrubs and trees (including their root systems) where possible.	FHWA, NPS
Require contractors to pressure-wash construction equipment before it enters the national recreation area to ensure that it is free of mud or seed-bearing material. All construction equipment will be inspected prior to entering the national recreation area.	FHWA construction contractor, NPS
Prohibit the damage or removal of vegetation without prior approval via the project documents or by national recreation area vegetation management staff.	FHWA, NPS



<b>Mitigation Measure</b>	<b>Responsible Organization</b>
Follow construction best management practices for topsoil management, revegetation preparation, and revegetation as outlined in the national recreation area revegetation plan.	NPS
Whenever possible, salvage and preserve disturbed vegetation for reuse.	FHWA, construction contractor, NPS
After site work is completed, scarify compacted soils and reestablish original contours.	FHWA, construction contractor
Spread topsoil in as near to its original location as possible to help preserve microorganisms and seeds of native plants.	Construction contractor
Use mulching, seeding, and/or planting with species native to the immediate area to improve revegetation success.	FHWA, construction contractor, NPS
For the Paria River Bridge stabilization project, plant willows in, on, or around gabion baskets andrevet mattresses. For the Lees Ferry Access Road project, conditions are not conducive for willow establishment so willow will not be planted.	FHWA, construction contractor, NPS
Conduct pre- and post-project exotic plant monitoring in the project area.	NPS
Treat existing populations of exotic vegetation at the site prior to other activities.	NPS
Implement exotic plant control measures during construction.	FHWA, Construction contractor, NPS
Require a management plan that includes continual maintenance to monitor and mitigate impacts for at least three years after construction.	NPS
For soil stabilization and erosion control, use only certified weed-free materials to avoid introduction of exotic plant species. Review all proposed materials on a case-by-case basis. Allowable materials for erosion control may include rice straw, straw or hay determined by the National Park Service to be weed-free, materials purchased from a certified source, cereal grain straw that has been fumigated to kill weed seed, and wood excelsior bales.	FHWA, construction contractor, NPS
<b>Water Resources</b>	
Prepare a storm water pollution prevention plan. Specify site-specific measures to reduce and control erosion, sedimentation, and compaction that can lead to water quality degradation.	FHWA, construction contractor
Where possible, plan and maintain vegetated buffers between areas of soil disturbance and waterways.	FHWA, NPS
Use soil erosion best management practices such as sediment traps, erosion check screen filters, jute mesh, and sterile hydromulch to prevent the entry of sediment into waterways.	FHWA, construction contractor, NPS
Promptly remove any hazardous waste that is generated in the project area.	FHWA, construction contractor
Obtain inspection and certification from the National Park Service that any piece of equipment that is placed in or near the river is free of invasive species.	FHWA, construction contractor, NPS
Inspect equipment for leaks of oil, fuels, or hydraulic fluids before and during use to prevent soil and water contamination. Require contractors to have and implement a plan to promptly clean up any leakage or accidental spills from equipment, such as hydraulic fluid, oil, fuel, or antifreeze.	FHWA, construction contractor
Minimize onsite fueling and maintenance. If these activities cannot be avoided, store fuels and other fluids, and perform fueling and maintenance, in designated areas that are contained and lined to contain spills. Require provisions for the containment of spills and the removal and safe disposal of contaminated materials, including soils.	Construction contractor
Delineate wetland vegetation and clearly mark it prior to construction work. Avoid wetlands unless wetland disturbance is specified in the contract documents. Apply general protection measures described above during construction in areas where wetland disturbances cannot be avoided.	NPS

<b>Mitigation Measure</b>	<b>Responsible Organization</b>
Along the banks of the Paria River, use best management practices to minimize river, corridor, and water quality impacts. These include, but are not limited to, the following. Conduct work during low-flow conditions.	FHWA, construction contractor
Salvage and stockpile wetland topsoil, and replace it to restore the disturbed areas.	Construction contractor, NPS
Stockpile all excavated material outside wetlands, in areas where drainage will not be constrained, and where loss from erosion will not be likely. Do not place fill in wetlands or riparian areas unless specified in contract documents.	FHWA, construction contractor, NPS
Install silt fences around all soil stockpile areas. Remove the fences after site rehabilitation is completed.	FHWA, Construction contractor
Add the contract specifications (section 208.05 Channel Preservation) to mitigate effects to the Paria River and downstream waters: Prior to working in the stream, divert the stream flow around the work area. Use structures such as temporary sediment traps, erosion check screens, coffer dams, or water-inflated coffer dams to divert the main flow and reduce turbidity downstream from the project site. Construct diversions in a manner that will provide a continuous flow to downstream reaches and will not affect the quality, quantity, or temperature of flows below the diversion in a manner that will adversely affect fish or other aquatic life. Remove diversions upon completion of the work at that location. Use the details provided by the U.S. Fish and Wildlife Service regarding pump placement and intake screens to protect fish. These details will be included in the construction specifications.	FHWA, NPS
Build temporary work pads on gravel or rock consisting of onsite alluvium, clean silt-free gravel, or river rock for large, stationary equipment working in the stream channel to provide a stable substrate. Limit fill to the minimum amount necessary to accomplish the work. Place approved barriers to contain any fluids that might leak from equipment around temporary fill and work areas in the streambed. Upon completion of the work, remove temporary fills and barriers.	FHWA, NPS
Slowly and carefully drive heavy equipment operated in the stream channel to minimize sediment movement and resulting increases in turbidity.	FHWA, construction contractor
Prior to anticipated high flows, remove from the natural bed of the waterway all temporary structures not designed to withstand high water flows and materials considered deleterious to aquatic life if inundated.	FHWA, construction contractor
<b>Wildlife</b>	
Conduct nesting bird surveys a week ahead of construction. If nests are found, modify the location or timing of the construction plan to prevent nesting disturbance. Conduct additional surveys for all new disturbances that occur during the bird breeding period.	FHWA, NPS
Inform construction workers and supervisors that under the Migratory Bird Treaty Act, no migratory bird, nest, or egg can be disturbed, removed, or destroyed. Provide instructions for notification of recreation area staff if the potential for disturbance is discovered.	FHWA, NPS
Monitor fish to determine if they are congregating in the area where a constructed diversion or cofferdam narrows the Paria River channel. Notify an NPS biologist if a fish congregation develops that suggests fish passage up the river channel is being affected. Construction activities may continue until the reason for the congregation is addressed by the NPS fish biologist.	FHWA, NPS
Fit pump intakes with mesh debris screens designed to specifications provided by the U.S. Fish and Wildlife Service to protect fish, particularly flannemouth suckers. Monitor the intake screens for debris buildup. Notify an NPS fish biologist if any juvenile fish are found impinged on the screen or any fish are entrained through the screen mesh.	Construction contractor

Mitigation Measure	Responsible Organization
<b>Special Status Species</b>	
Inform construction workers and supervisors about the potential for special status species in the work vicinity and actions to take if individuals or populations of a special status species are identified.	FHWA, NPS
If appropriate, include contract provisions that require a stop in construction activities if a special status species is discovered in the project area, until recreation area staff evaluate the situation. This will allow modification for any protection measures determined necessary to protect the species.	FHWA, NPS
Seed will be collected for nakedstem sunray and Mojave indigobush and will be propagated in a greenhouse. These plants will then be planted along the roadway after construction.	NPS
Prior to construction, the project will be surveyed for Marble Canyon spurge. If the species is identified inside the disturbance limits, the park will collect seed from the species and propagate it in a greenhouse. These plants will then be planted along the roadway after construction.	NPS
If feasible, nakedstem sunray, Mojave indigobush, and Marble Canyon spurge will be salvaged prior to construction. These plants will then be planted along the roadway after construction.	NPS
For soil borrowing activities at the unused wastewater treatment lagoon site, minimize to the extent practicable, disturbing and excavating areas where Mojave indigobush plants are growing.	FHWA, construction contractor, NPS
Once soil borrowing activities are complete at the unused wastewater treatment lagoon site, attempt to restore Mojave indigobush plants to the disturbed site by broadcasting its seed and/or planting live plants.	NPS
Implement the following conservation measures specific to the California condor: Instruct construction workers and supervisors to avoid interaction with condors and to immediately contact the Glen Canyon National Recreation Area, Division of Resource Management at 928-608-6267 if a condor settles at the construction site.	FHWA, construction contractor
Clean up the construction site up at the end of each day (for example, trash removed, scrap materials picked up) to minimize the likelihood of condors visiting the site.	Construction contractor
Specify that the contractor must immediately dispose of any dead animals found within the construction limits by placing the carcass in the nearest available dumpster. If any dead animals are observed outside the construction limits, the contractor will inform the contracting officer. The contracting officer will contact the park for removal of any dead animals found outside the construction limits and within 500 feet of the construction zone. Dispose of all carcasses by placing the carcass in the nearest available dumpster. Park staff will empty the dumpsters on a regular basis so roosting by condors is not encouraged from odor coming from the dumpsters.	Construction contractor, NPS
To prevent water contamination and potential poisoning of condors, develop and implement a spill prevention and cleanup plan for this project. Include provisions for immediate clean-up of any hazardous substance, and define how each hazardous substance will be treated in case of leakage or spill. Ensure that the plan considers possible leakage from all equipment, materials, and vehicles being used. Provide this plan at least two weeks prior to start of construction (including preliminary set-up activities).	FHWA, construction contractor
Any project activity that may cause imminent harm to condors will be temporarily suspended until permitted personnel could assess the situation and determine the correct course of action.	FHWA, construction contractor, NPS

<b>Mitigation Measure</b>	<b>Responsible Organization</b>
Prior to the start of project activities, Glen Canyon National Recreation Area staff will contact personnel (Peregrine Fund 928-355-2270) monitoring condor locations and movement to determine the locations and status of condors in or near the project area.	NPS
All project workers will be advised of the possibility of the occurrence of California condors in the project area.	FHWA, construction contractor, NPS
All project workers will be instructed to avoid interaction with condors and to immediately contact the appropriate Glen Canyon National Recreation Area or Peregrine Fund personnel if and when condor(s) occur at the project area. To avoid injury both to condors and to personnel, project workers will not haze condors.	FHWA, construction contractor, NPS
If a condor occur at the project site, only permitted personnel will employ appropriate techniques to cause the condor to leave the site. "Permitted" personnel means those individuals with the necessary federal and state permits.	NPS
<b>Cultural Resources</b>	
During the design stage, ensure that the proposed action will avoid identified cultural resources.	FHWA, NPS
To avoid impacts to documented historic properties, including the Honeymoon Trail, which intersects the Lees Ferry Road in several locations, make sure that project activities stay within the previously disturbed road prism and do not exceed established protective construction boundaries.	FHWA, construction contractor, NPS Cultural Resources Specialist (Monitor)
Monitor for previously unidentified archeological resources by having a professionally qualified archeologist on hand during all project activities that could include subsurface disturbance to areas determined to be sensitive and/or to possess the potential for presence of intact subsurface archeological remains.	FHWA, construction contractor, NPS Cultural Resources Specialist
Stop all work in the immediate vicinity if previously unidentified archeological resources are discovered during construction until the resources could be identified and documented.	FHWA, construction contractor
If archeological resources eligible for listing in the National Register of Historic Places are discovered, alter the project design to avoid them. If the project component cannot be rerouted and the resources preserved in situ, prepare an appropriate mitigation strategy in consultation with the Arizona State Historic Preservation Officer and American Indian tribes traditionally associated with recreation area lands.	FHWA, NPS Cultural Resources Specialist
In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, stop all work in the immediate vicinity and comply with the provisions outlined in the Native American Grave Protection and Repatriation Act.	FHWA, construction contractor, NPS Cultural Resources Specialist
Inform all contractors and subcontractors of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Instruct them regarding procedures to follow in case previously unknown archeological resources are uncovered during construction.	FHWA, NPS Cultural Resources Specialist
<b>Health and Safety</b>	
Implement measures to close and/or redirect visitor access in areas that will be affected by construction to ensure visitor health and safety. Provide information on alternatives that will help visitors achieve their goal while maintaining a safe distance from the work area.	FHWA, construction contractor, NPS
Implement a traffic control plan during construction, as warranted. Include strategies to maintain safe and efficient traffic flow.	FHWA, construction contractor
Implement measures to reduce adverse effects of construction on visitor health and safety.	FHWA, construction contractor, NPS

Mitigation Measure	Responsible Organization
<b>Operations of the National Park Service and Partners</b>	
Coordinate activities of contractors and national recreation area staff to minimize disruption of normal recreation area activities. Inform construction workers and supervisors about the special sensitivity of recreation area values, regulations, and appropriate housekeeping.	FHWA, NPS
Share information regarding implementation of this and other foreseeable future projects with the public. This could include methods such as postings on the national recreation area's website, posters on bulletin boards, and/or press releases. The goal will be to steer activities away from project areas and minimize the potential for negative impacts on the visitor experience.	FHWA, NPS
To minimize potential impacts on concessioners and visitors, develop a construction schedule providing details of traffic delays, closures, and night work. Provide the schedule to concessioners, post it on all bulletin boards and on the national recreation area website, and update it regularly.	FHWA, NPS
Orient lighting in night work areas so that downward-facing illumination will be focused on the immediate area where work was being performed. This will minimize potential effects to the natural lightscape.	FHWA, construction contractor
Prior to construction, conduct a meeting with concessioners, project managers, and business resources staff to provide information on anticipated issues that may occur.	FHWA, NPS
<b>General Construction Best Management Practices</b>	
Clearly state all protection measures in the construction specifications.	FHWA, NPS
Minimize the amount of ground disturbance for activities not directly related to construction, such as staging and stockpiling areas. Return all staging and stockpiling areas to pre-construction conditions following construction. Limit parking of construction vehicles to designated staging areas or existing roads and parking lots.	FHWA, construction contractor, NPS
Identify and define construction zones with construction tape or other material prior to any construction activity. Use the zone to confine activity to the minimum area required for construction. Stipulate that construction activities, including material staging and storage, cannot occur beyond the construction zone as defined by the construction zone fencing, where appropriate.	FHWA, construction contractor, NPS
Comply with federal and state regulations for the storage, handling, and disposal of all hazardous material and waste. If hazardous materials will be used on site, make provisions for storage, containment, and disposal.	FHWA, construction contractor
In the contract, identify specific provisions and implementation measures to prevent storm water pollution during construction activities, in accordance with the Clean Water Act's National Pollutant Discharge Elimination System permit program and all other federal, state, and local regulations, and in accordance with the storm water pollution prevention plan to be prepared for this project.	FHWA, construction contractor
Provide the contractor with a copy of U.S. Environmental Protection Agency document EPA 832-F-99-003, Storm Water Management Fact Sheet-Dust Control. Require the contractor to submit a dust control plan prior to construction.	FHWA
Ensure that construction equipment uses the best available technology for sound dampening muffler and exhaust systems.	FHWA, construction contractor
Require contractors to develop and implement a plan that will prevent excessive idling of all vehicles used in construction. The goal of the plan will be to save fuel and reduce noise and emissions.	FHWA, NPS
Place construction debris in refuse containers at least daily. Dispose of refuse at least weekly. No burning or burying of refuse is allowed in the national recreation area.	Construction contractor

## ERRATA SHEETS

### Lees Ferry Road Rehabilitation and Paria River Bridge Stabilization Environmental Assessment

This section addresses comments received that warranted clarification or explanation. The National Park Service received one correspondence from an organization on the environmental assessment for the Lees Ferry Road Rehabilitation and Paria River Bridge Stabilization project during the public comment period that ended August 16, 2012. The comments centered on typographic errors and the topic of cultural resources. No agency comments were received.

An interdisciplinary team reviewed the received comments to identify any substantive comments. Substantive comments were considered comments that:

- Question with reasonable basis, the accuracy of the information in the environmental assessment.
- Question with reasonable basis, the adequacy of the environmental analysis.
- Present reasonable alternatives other than those presented in the environmental assessment.
- Cause changes or revisions in the proposed action.

The comments received during the public review of the environmental assessment resulted in text changes, which are described below. The comments received did not result in any changes to the results of the impact analysis.

The environmental assessment and this errata section form the record on which the finding of no significant impact is based.

#### TEXT CHANGES

The National Park Service revised the description of the preferred alternative to identify the source of soil borrow material that would be used as fill material for grade changes and streambank stabilization at Cathedral Wash and to define mitigation measures that would be used to minimize potential impact to special status plant species (Mojave indigobush) that grows in and near some of the soil borrow area. Changes in the environmental assessment generated by these revisions are presented below. These changes do not change the results of the impact analysis. These changes are incorporated into the environmental assessment. Text to be added or changed in the environmental assessment is in bold.

*Add the following bullet to the description of the Purpose of the Action on page 5.*

- **Provide functional and enduring road infrastructure.**

Change "**south**" to "**east**" in the description of where the Paria River is at risk of erosion in the description of alternative A on page 18.

Add the following to the preferred alternative of the environmental assessment on page 21 following bullet 6:

The following actions would take place at the location commonly referred to as the Lees Ferry bone yard which contains a wastewater treatment lagoon site that was constructed but never received any wastewater because the lodge and marina the lagoon was intended to serve, were never constructed:

- Access the lagoon area and the berms to be excavated using an existing dirt road that begins at Lees Ferry Road and terminates at the bone yard lagoon site.
- Excavate approximately 5,000 cubic yards of soil from previously constructed lagoon berms.
- Haul excavated soil using the existing dirt road.
- Limit the disturbance area, including borrow area and vehicle turning areas, to the existing footprint of the lagoon and dirt road.
- Remove borrow in a manner that improves the visual appearance of the site and as much as possible, restore approximately 2 acres of disturbance to a natural appearance, plant cover, and grade.
- Retain the bone yard and its access road in their current state.
- Transport the borrow materials using Lees Ferry Road to the Cathedral Wash area to improve drainage features and to facilitate handicap access at a wayside exhibit by modifying roadway grade changes.

Add the following to Table 5 of the environmental assessment at page 28 as a new water resources mitigation measure.

Mitigation Measure	Responsible Organization
All conditions identified in water quality permits (for example, from section 401 water quality certification or section 404 material discharges permit) will be implemented.	FHWA, NPS

Add the following to Table 5 of the environmental assessment at page 30 as new special status species mitigation measures.

Mitigation Measure	Responsible Organization
Seed will be collected for nakedstem sunray and Mojave indigobush and will be propagated in a greenhouse. These plants will then be planted along the roadway after construction.	NPS
Prior to construction, the project will be surveyed for Marble Canyon spurge. If the species is identified inside the disturbance limits, the park will collect seed from the species and propagate it in a greenhouse. These plants will then be planted along the roadway after construction.	NPS
If feasible, nakedstem sunray, Mojave indigobush, and Marble Canyon spurge will be salvaged prior to construction. These plants will then be planted along the roadway after construction.	NPS

Mitigation Measure	Responsible Organization
If appropriate, include contract provisions that require a stop in construction activities if a special status species is discovered in the project area, until recreation area staff evaluate the situation. This will allow modification for any protection measures determined necessary to protect the species.	FHWA, NPS
For soil borrowing activities at the unused wastewater treatment lagoon site, minimize to the extent practicable, disturbing and excavating areas where Mojave indigobush plants are growing.	FHWA, construction contractor, NPS
Once soil borrowing activities are complete at the unused wastewater treatment lagoon site, encourage Mojave indigobush plants at the disturbed site by broadcasting its seed and/or planting live plants.	NPS
Conservation measures provided by the U.S. Fish and Wildlife Service will be implemented.	NPS

Revise the mitigation measure in Table 5 of the environmental assessment on page 31 under cultural resource to read as follows:

**Monitor for previously unidentified archeological resources by having a professionally qualified archeologist on hand during all project activities that could include subsurface disturbance to areas determined to be sensitive and/or to possess the potential for presence of intact subsurface archeological remains.**

Add the following to the second paragraph describing the environmentally preferable alternative on page 34: **"The absence of impacts to cultural resources also contributes to the selection of alternative B as the environmentally preferable alternative."**

Remove the word "to" from the following sentence under Historic Structures Cumulative Impacts on page 90. **"These future projects could to slow the deterioration of contributing elements of the district."**

Add the phrase **"as per the inadvertent discovery plan."** to the end of the second sentence in the fourth paragraph on page 94 under Archeological Resources Impact Analysis.

The first sentence of the first soil mitigation measure on page 27 will be changed to read **"Work only on the road prism for most of the project."**

The word **"cylindrical"** was removed from the parenthetical description of a gabion on page 21 of the environmental assessment and in the Floodplain Statement of Findings (Appendix B, page 158).

The following changes were made to the Floodplain Statement of Findings (Appendix B):

Page 158 – replaced **"slope paving"** with **"wingwalls and headwalls"** in second bullet

Page 158 – second sentence in "Upstream and Downstream Bank" paragraph should read **"This would reduce the potential for water and rock to flow onto the bridge deck and would minimize erosion at the end of the bridge."**



Page 158 – first sentence in “East Bank” paragraph should read **“Bank protection would consist of a 1-foot-thick revet mattress placed on the riverbank (wire-enclosed riprap) at a 2 horizontal to 1 vertical slope, extending approximately 240 feet upstream from the existing east bridge abutment and incorporating two channel spurs upstream.”**

Page 158 – second sentence in “East Bank” paragraph should read **“Plan views of the preliminary design are shown in figures 5 and 6 (shown in the EA).”**

Page 158 – heading Bridge Abutment changed to **“Bridge Abutment and Pier”**

Page 158 – the next to last sentence under Bridge Abutment and Pier should read **“At least 6 inches of riverbed would be excavated to prepare the surface for placement of concrete at current bedrock level.”**

Page 164 – second sentence of Summary should end with **“Colorado River”** instead of Paria River.



## Floodplain Statement of Findings

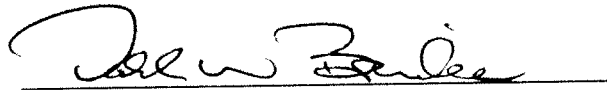
U.S. Department of the Interior  
National Park Service  
Glen Canyon National Recreation Area, Arizona

### Statement of Findings for Floodplains

Lees Ferry Road Rehabilitation and  
Paria River Bridge Stabilization

Recommended:

Todd Brindle



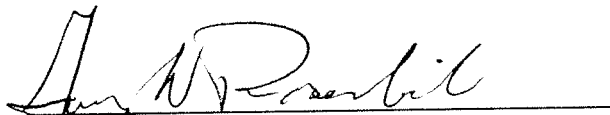
Superintendent

10/18/2012

Date

Certification of  
Technical Adequacy:

Gary Rosenlieb



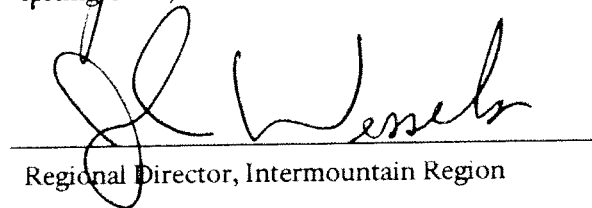
Acting Chief, Water Resources Division

10/23/2012

Date

Recommended:

John Wessels



Regional Director, Intermountain Region

10/26/12

Date



Executive Order 11988, Floodplain Management, requires the National Park Service (NPS) to evaluate the likely impacts of actions in floodplains, avoid adverse impacts associated with the occupancy and modification of floodplains, and avoid support of floodplain development wherever there is a practicable alternative. *Director's Order 77-2: Floodplain Management* (NPS 2003) and its companion document, *Procedural Manual 77-2* (NPS 2004), provide NPS policies and procedures for complying with Executive Order 11988. This statement of findings documents compliance with these NPS floodplain management procedures.

This floodplain statement of findings reviews the project to rehabilitate the Lees Ferry Road and stabilize the Paria River Bridge in Coconino County, Arizona. It describes the flood hazard associated with selected alternative (without mitigation), analyzes risks at alternative sites, describes the effects on floodplain values, and describes and evaluates mitigation measures.

## **BRIEF DESCRIPTION OF THE PROPOSED ACTION**

### **Lees Ferry Road Components**

Under the proposed action, the Lees Ferry Road would be restored, rehabilitated, and resurfaced. The entire 6-mile road would be pulverized, reshaped, compacted, and repaved with consistent lane widths. The radii of curves that are too tight would be widened by up to 4 feet.

The road profile would be raised by about 6 inches for approximately 4,700 feet, starting 0.6 miles north of the intersection of U.S. Highway 89A and Lees Ferry Road. This action would remove existing pavement undulations, provide a smoother driving surface, and improve the pavement structure. The concrete pad at the fee station would be removed as part of the proposed action.

Multiple pullouts provide vehicle parking for access to scenic viewpoints, trailheads, or other points of interest. Some of these pullouts are planned, paved parking areas, while others have developed over time as a result of use. Alternative B would close some of these pullouts and improve others:

About 0.9 acre (39,429 square feet) of existing pullouts would be removed. All removed pullouts would be graded to blend with the landscape and revegetated.

About 0.21 acre (9,099 square feet) would be paved to accommodate revised designs of pullouts at Cathedral Wash and Balanced Rock and to formalize a river overlook approximately 0.1 mile south of the Lees Ferry Campground turnout. Each of these pullouts would be approximately 300 feet long. Parking and pullout areas at Cathedral Wash and Balanced Rock would meet the Architectural Barriers Act Accessibility Standard so that people with impaired mobility could access the interpretive signs.

In addition to the lengthened pullout at Cathedral Wash, the Cathedral Wash trailhead would be formalized. The trailhead change would allow pedestrians to access Cathedral Wash on the same side of the road as the pullout instead of crossing the road as is currently done.

### **Staging Areas**

Construction materials would be stockpiled and construction equipment would be staged at various NPS-approved locations along the Lees Ferry Road. The primary staging area would be several hundred feet east of the Paria River Bridge along the Lees Ferry Road. Staging locations would be in existing and designated NPS staging areas and in areas along the road corridor that have been previously disturbed. Equipment and materials would be stored in areas approved by the National Park Service. The asphalt and concrete batch plant would be outside the national recreation area in a previously disturbed area and would not affect natural or cultural resources in or outside the national recreation area.

## **Drainage Components**

Drainage improvements would occur along and across Lees Ferry Road, including culvert improvements, providing positive drainage along ditches, and installing revet mattresses (wire enclosed riprap) adjacent to the road to prevent future erosion at many locations. The following improvements would be made to drainage components along Lees Ferry Road.

All paved ditches would be evaluated for effectiveness and rehabilitated or reconstructed accordingly. Existing U-shaped ditches would be replaced with straight-sloped paved ditch sections (with curb and gutter in the Cathedral Wash area). These types of paved ditch sections may also be used where new roadside drainage improvements were required. Revet mattress or loose riprap may be placed at the end of paved ditches to prevent future erosion.

Curb reconstruction/extension would be completed as needed along the road to ensure fill slope protection.

Solutions to preventing culvert cross-drains from becoming plugged with sediment would be implemented. Actions could include replacing some culverts with larger diameters and/or installing additional cross-culverts to improve drainage capacity. Additional solutions could include skewing cross-culverts relative to the road for improved hydraulic flow.

Existing drop inlets along the roadside would be replaced with flared end sections.

The following actions would take place in areas along the Lees Ferry Road:

Near Cathedral Wash, the existing pullout would be lengthened approximately 150 feet to the south to better accommodate visitor vehicles. Embankment protection, in the form of revet mattresses and gabions (wire baskets filled with rock), would be placed on the east bank of Cathedral Wash to protect the bank and the Lees Ferry Road from further erosion (see figure 4). Improvements associated with Cathedral Wash also would include outlet protection for the large box culvert under the road to prevent further erosion and scour.

At No Name Wash, larger culverts sized to pass design discharges would be constructed to prevent road overtopping. Slope paving and a headwall would be installed to minimize erosion.

Undermining of Lees Ferry Road a quarter-mile north of the Lees Ferry campground turnoff would be repaired by installing erosion protection using a gabion wall adjacent to the road.

## **Paria River Banks**

Erosion stabilization along the banks of the Paria River would consist of added bank protection with channel spurs, also known as spur dikes, to deflect the strongest high-water flows away from the bank. A gabion retaining wall and revet mattresses would be installed to cover vulnerable slopes.

**Upstream and Downstream West Bank.** The bridge's western end-walls would be extended upstream and downstream 10 to 15 feet, and the areas above it would be graded to allow runoff from the road to flow onto the slope paving. This would reduce the potential for water and rock to flow onto the bridge deck and would to minimize erosion at the end of the bridge. Concrete lining at the toe of the west and east slope paving would be extended to the bridge pier footing.

**East Bank.** Bank protection would consist of a 1-foot-thick revet mattress placed on the riverbank (wire-enclosed riprap) at a 2 horizontal to 1 vertical slope, extending approximately 240 feet upstream from the existing left bridge abutment and incorporating two channel spurs upstream. Plan views of the preliminary design are shown in figures 5 and 6. The revet mattress would be underlain with a geotextile fabric and filled with 4- to 8-inch diameter rock. Larger riprap would be preferable, but is not locally available and hauling costs would be prohibitive. The toe of the revet mattress would be tied to a row of 3-foot by 3-foot gabion baskets embedded at least 6 feet below the minimum channel bed profile.

The channel spurs would reduce the risk of flanking of the revetment by limiting channel bank erosion immediately upstream of the revetment and redirecting the flood flows away from the susceptible banks. The spurs would extend into the channel approximately 30 feet from the top of bank, be embedded approximately 20 feet horizontally, and be at least 3 feet below the channel elevation at the bank line. The two spurs would be adjacent to an existing sandbar, with contact limited to flood level flows.

### **Bridge Abutment**

Additional concrete paving would be added to the riverbed area under the bridge to protect the existing bridge abutment fills and pier footing, and minimize the potential for scour. This will extend from the east side to the west side bottom edge of the existing slope paving. A low-flow channel for fish passage would be incorporated into the lining. This area is approximately 45 feet long by 45 feet wide under the bridge. At least 6 inches of riverbed would be excavated to prepare the surface for placement of concrete at current bedrock level. Turndown walls would be installed on the upstream and downstream edges to prevent undercutting.

### **Lonely Dell Access Road**

A gabion retaining wall at the Lonely Dell Access Road would stabilize the bank slope and restore the road section. In addition, two channel spurs would be installed to prevent further bank erosion. As shown in figure 6, the gabion wall would span approximately 40 feet of riverbank and be founded on the bedrock formation, which is approximately 15 feet below the road surface. The two channel spurs would be immediately upstream at approximately 50-foot intervals. They would be oriented downstream, extending into the channel approximately 20 feet from the top face of the bank and transitioning down to the channel bed.

Because of the highly erosive upstream bank, the spurs have a high risk of flanking (FHWA 2009). However, the other alternative is to armor a longer portion of the upstream channel, which would have greater environmental impacts and higher costs. Therefore, alternative B includes future maintenance of the spurs in response to channel migration.

The Lonely Dell Access Road could be closed for up to two weeks during construction of the bank stabilization. The adjacent parking area could be used for staging materials and equipment, but would be restored to its original condition following completion of the work. The construction contractor would maintain rough vehicular access around the excavation to facilitate construction, and this access could be used for emergency response, if needed. Staging and disturbance would be limited to the Lonely Dell Access Road prism and would not extend into the uphill cut-slope.

When it was necessary to perform work from within the riverbed, equipment would enter the river near the Paria River Bridge and travel through the riverbed. If riverbed access was unavailable, an alternate route using an old gravel-surfaced road east and south of the Lonely Dell work site would be used.

### **Concrete Removal**

A concrete slab (24 feet x 10 feet with a thickness of 0.5 to 3 feet) is in the Paria River channel about 700 feet upstream from the proposed Lonely Dell channel improvements. The concrete was part of a road that previously crossed the Paria River. Alternative B would remove this slab and dispose of the waste outside Glen Canyon National Recreation Area. Because of the steep riverbanks at this location, it would be accessed through the riverbed by driving equipment up from the Lonely Dell work site. Work would be done during low flow to minimize impacts. Care would be taken to minimize disturbance to vegetation and the streambed when accessing and removing the concrete.

## **BRIEF SITE DESCRIPTION**

The project area includes the Lees Ferry Road from its junction with U.S. Highway 89A at Marble Canyon to the road's terminus at the boat launch parking lot about 6 miles to the northeast; the Paria River's banks and river bottom at and adjacent to the Paria River Bridge; and a site along the Paria River where it flows adjacent to the Lonely Dell Access Road, about 0.5 mile upstream of its confluence with the Colorado River. The project location is shown in figures B-1 and B-2.

Most of the development in the Lees Ferry area consists of Class I actions. As shown in table B-1, these are man-made features that by their nature entice or require individuals to occupy the site, are prone to flood damage, or result in impacts to natural floodplain values. Class I actions are subject to the floodplain policies and procedures if they lie within the 100-year floodplain. The Lees Ferry area includes roads (Lees Ferry Road and Lonely Dell Access Road) and a bridge that fall within a 100-year floodplain, and as a result, are subject to the floodplain policies and procedures. None of the man-made features around Lees Ferry are Class II or Class III actions







**Table B-1: Floodplain Action Classes**

<b>Action Class</b>	<b>Description</b>
Class I	Include location or construction of administrative, residential, warehouse, and maintenance buildings; non-excepted parking lots; or other man-made features which by their nature entice or require individuals to occupy the site, are prone to flood damage, or result in impacts to natural floodplain values. Class I actions are subject to the floodplain policies and procedures if they lie within the 100-year floodplain (the base floodplain).
Class II	Include any activity for which even a slight chance of flooding is too great. Class II actions are subject to the floodplain policies and procedures if they lie within the 500-year floodplain. Examples of Class II actions are the location or construction of: <ul style="list-style-type: none"><li>• Schools, hospitals, clinics, or other facilities occupied by people with physical or medical limitations;</li><li>• Emergency services;</li><li>• Fuel storage facilities, 40,000 gallons per day or larger sewage treatment plants, and storage of toxic or water-reactive materials, including hazardous materials; and</li><li>• Irreplaceable records, museums, and storage of archeological artifacts.</li></ul>
Class III	Include Class I or Class II actions in high hazard areas, which include coastal high hazard areas and areas subject to flash flooding. In high hazard areas, picnic facilities, scenic overlooks, foot trails, and associated day-time parking facilities may be placed within the 100-year floodplain, but these facilities must contain signs informing visitors of flood risk and suggested actions in the event of flooding. Consideration should be given to providing additional levels of flood protection. For other activities, Class III actions are subject to the floodplain policies and procedures if they lie within the extreme floodplain.

Source: NPS 2003.

#### **Characterization of the Flooding and Associated Floodplain Processes**

The main channel of the Paria River in the vicinity of the bridge is approximately 80 to 100 feet wide, with bank heights ranging from 8 to 20 feet. The 100-year Paria River floodplain in this area is about 1,000 feet wide. Flow depths can range from around 6 inches for normal low flows to nearly 20 feet during a 100-year event (FHWA 2009).

#### **Justification for Use of the Floodplain**

**Why the Proposed Action Must be in a Floodplain.** The road rehabilitation and bank stabilization can only be performed in the floodplain because that is where the issues that need to be addressed are located. The road must cross the Paria River to reach the Lees Ferry boat ramp and this requires crossing the floodplain. Likewise, the bank stabilization efforts can only be implemented on the Paria River banks, which are within the floodplain. It would be logistically impractical and prohibitively expensive to relocate the road and/or to bridge the river so that none of the infrastructure would be in the floodplain. Therefore, proposed actions must be implemented within the floodplain.

The bank stabilization at Cathedral Wash and No Name Wash also must be in the floodplain because that is where the problem exists. Although the bank hardening would be implemented in the floodplain, adverse effects on the ability to convey a flood flow would be minimal as the potential for serious bank erosion would be minimized. The channels of the washes would retain their ability to convey flood flows downstream even after an event that overtopped existing capacity.

**Investigation of Alternative Sites.** The proposed action to stabilize the Paria River banks upstream of the Paria River Bridge, by its nature, must be implemented in the floodplain along the river. No alternative site would be feasible. Alternative approaches to implementing the stabilization included the use of additional spur dikes, increased length of bank armoring withrevet mattresses, and the installation of as many as six bendway weirs that would have been directly tied into the revet mattress bank protection at 50-foot intervals. These options were dismissed because of a combination of feasibility questions, too great an adverse environmental impact, and/or the inability to meet the Paria River Bridge protection element of the project's purpose and need.

### **Description of Site-Specific Flood Risk**

**Recurrence Interval of Flooding.** As shown in figure B-1, parts of the Lees Ferry Road and Paria River Bridge are in the 100-year floodplain based on the Federal Emergency Management Agency map. As described below, the main channel cannot contain flows greater than those resulting from a 2-year precipitation event.

**Hydraulics of Flooding at the Site.** Results of a hydraulic analysis performed by the U.S. Department of Transportation, Federal Highway Administration indicate that flood flows upstream of the bridge are contained within the main channel up to approximately a 2-year event. Water from larger events spills into the floodplain area south of the main channel where it ponds behind the Lees Ferry Road, eventually draining back into the channel to pass under the bridge. When the discharge exceeds a 10-year event, flows overtop the Lees Ferry Road (FHWA 2009).

**Opportunity for Evacuation and Protection of Human Life.** The best way to protect people traveling the Lees Ferry Road during a large event is to provide a warning system and evacuation plan. This is challenging because of the sudden nature of flooding in the area and the difficulty in predicting intense rainfall events. National Weather Service predictions and observations continue to improve, and the National Park Service will continue to monitor information from this agency regarding dangerous storms in the Paria River watershed. When conditions of concern are detected, the National Park Service will notify personnel in the Lees Ferry area to take appropriate actions to warn and protect visitors. An evacuation plan is currently being prepared and is expected to be operational in 2014. This plan will facilitate notifying people using the Paria River and Lees Ferry Road area so they can be rapidly and effectively evacuated when a warning is issued.

**Geomorphic Considerations.** As indicated by the eroded, vertical banks in the project reach, velocities and shear stresses during flood flows are relatively high. During a 2-year event, the average depth and velocity are around 9 feet and 6 feet per second, respectively. As flood flows increase, depths approach 20 feet at some locations, and average channel velocities reach 8 feet per second. The highest velocities occur at the bridge, where the channel narrows and flows accelerate. High velocities also occur upstream of the bridge along the outside (south side) of the channel bend (FHWA 2009).

### **Floodplain Mitigation Measures**

The following flood mitigation measures would be used to minimize adverse effects to floodplain values (for example, aquatic life habitat, water quality, and channel capacity for flood flows) and to ensure the safety of construction workers and national recreation area visitors.

Conduct work during low-flow conditions.

Prior to working in the stream, divert the stream flow around the work area. Use structures such as temporary sediment traps, erosion check screens, coffer dams, or water-inflated coffer dams to divert the main flow and reduce turbidity downstream from the project site.

Construct diversions in a manner that would provide a continuous flow to downstream reaches and would not affect the quality, quantity, or temperature of flows below the diversion in a manner that would adversely affects fish or other aquatic life.

Limit fill for temporary diversions to the minimum amount necessary to accomplish the work.

Remove temporary fills and diversions upon completion of the work at that location.

Slowly and carefully drive heavy equipment operated in the stream channel to minimize channel alterations, sediment movement, and water turbidity.

Prior to anticipated high flows, remove from the natural bed of the waterway all temporary structures not designed to withstand high water flows and materials considered deleterious to aquatic life if inundated.

Minimize disturbance to vegetation and the streambed when accessing and removing the concrete and when installing bank protection.

### **Summary**

The proposed action would reduce the potential for flood damage on the Class I actions of roads and the bridge in the Paria River floodplain by improving drainage, reducing erosion along the Lees Ferry Road, and reducing erosion in the river channel near the bridge and along the Lonely Dell Access Road. Erosion protection measures and drainage improvements along the Lees Ferry Road would reduce erosion and overtopping of the road as water flowed in washes toward the Colorado River. Stabilization features along the Paria River would help reduce erosion of the riverbank. These features would slightly alter river processes at the installation sites by changing the speed and direction of the flow and reducing the erosive capability of the river.

The proposed action would result in beneficial effects on existing infrastructure in the floodplain, consisting of the Paria River Bridge, Lees Ferry Road, and Lonely Dell Access Road. No long-term, adverse impacts on floodplains would result from this alternative.

Mitigation and compliance with regulations and policies to prevent impacts to water quality, floodplain values, and loss of property or human life would be strictly adhered to during and after construction. Individual permits from local, state, and other federal agencies would be obtained prior to construction.

Therefore, the NPS finds the preferred alternative to be acceptable under Executive Order 11988 for the protection of floodplains.

*Note:* references cited are provided in the environmental assessment.

## Appendix – Non-Impairment Finding

National Park Service's *Management Policies 2006* require analysis of potential effects to determine whether actions will impair natural or cultural resources or values of a unit of the national park system. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values.

However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within a park, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may, but does not necessarily, constitute an impairment. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park; or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents.

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

The park resources and values that are subject to the no-impairment standard include:

- The park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- Appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- The park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- Any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. The National Park Service's threshold for considering whether there could be an impairment is based on whether an action will have significant effects.

Impairment findings are not necessary for visitor use and experience, socioeconomics, public health and safety, environmental justice, land use, and park operations, because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act, and cannot be impaired in the same way that an action can impair park resources and values. After dismissing the above topics, topics remaining to be evaluated for impairment include water resources and hydrology, wetlands and waters of the U.S., floodplains, soils, vegetation, special status species, and cultural resources.

Glen Canyon National Recreation Area was created by Congress in 1972 (Public Law 92-593) to, "provide for public outdoor recreation use and enjoyment of Lake Powell and lands adjacent thereto in the states of Arizona and Utah and to preserve scenic, scientific, and historic features contributing to public enjoyment of the area." The recreation area's primary management objective, as stated in its 1979 General Management Plan, is "to manage the recreation area so that it provides maximal recreational enjoyment to the American public and their guests." Accordingly, the topics evaluated for impairment each contribute in some manner to the purposes identified in the establishing legislation; are key to the natural or cultural integrity of the park; and/or are identified as a goal in the park's general management plan and other relevant National Park Service planning documents.

- Water resources and hydrology, as well as wetlands and waters of the U.S., and floodplains, clearly contribute to the purpose and significance of the park with regard to recreation and the preservation of scenic and scientific features. Construction impacts associated with the selected action will be negligible to minor, short-term, and adverse because of activity in the Paria River bed. Long-term impacts from drainage infrastructure improvements and bank stabilization will be beneficial but of negligible intensity because the free-flowing character of the water in the channel will not be altered and sediment loading will not change from historical norms. Because of the ephemeral nature of area wetlands, the small area affected at each individual project site, and the very low functional values of affected wetlands, the selected action will have short-term, minor, adverse impacts. The long-term, adverse impacts will be of negligible intensity for the same reasons. Therefore, there will be no impairment of water resources and hydrology, wetlands and waters of the U.S., or floodplains.
- Soils, vegetation, and special status species are resources that contribute to the natural environment that can be enjoyed by visitors, as well as provide integral elements of a the native ecosystems. Short-term impacts to soils and vegetation from the selected action will be adverse and minor. Long-term impacts to soils and vegetation will be beneficial and minor and will result from reduced erosion along the Paria River banks. During construction, short-term adverse impacts up to minor intensity will occur on the Brady pincushion cactus because of potential access for illegal collection, to razorback sucker habitat because of increased sediment loading, and on desert bighorn sheep because of increased human activity. All other short- and long-term impacts on special status species or their habitats will be negligible. As a result, there will be no impairment of soils, vegetation, or special status species.
- Cultural resources, including historic structures, cultural landscapes, archeological resources, and ethnographic resources, provide not only recreation and enjoyment to the public who come to Lees Ferry to visit the historic district, but contribute to scientific and cultural understanding of the area's history. The selected action will result in; negligible impacts to historic structures because it will not disturb any contributing elements of the historic district; long-term, minor, adverse impacts to the cultural landscape as a result of the introduction of new elements to the viewshed; long-term, minor, adverse impacts to archeological resources because of its ground-disturbing activities; and, short- and long-term, negligible to minor, adverse impacts to ethnographic resources as a result construction disturbances and the removal of plants that have ethnographic significance to Native Americans. Therefore, the negligible and minor effects will result in no impairment of cultural resources.

### *Non-Impairment Finding*

In conclusion, as guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the superintendent's professional judgment that there will be no impairment of park resources and values from implementation of the selected action.