WILD AND SCENIC RIVERS ACT

SECTION 7(a) DETERMINATION

South Fork of the Kings River Wild and Scenic River

BRIDGE REPLACEMENT AT CEDAR GROVE SEQUOIA AND KINGS CANYON NATIONAL PARKS CALIFORNIA

Recommended:

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acting

INTRODUCTION

The South Fork of the Kings River in Sequoia and Kings Canyon is a component of the National Wild and Scenic Rivers System. Projects that involve construction in the bed or on the banks of the South Fork of the Kings River are water resources projects that require review under Section 7 of the Wild and Scenic Rivers Act. The authority for this determination was enacted under Section 7 (a) of the Wild and Scenic Rivers Act (PL 90-542, as amended, 16 USC 1271-1278). Section 7(a) states, in part:

"no department or agency of the United States shall assist by loan, grant, license or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration."

The Kings River is the largest free-flowing river in the Sierra Nevada. Approximately 88.8 river miles of the Middle Fork, South Fork, and main stem of the Kings River were added to the national wild and scenic rivers system on November 3, 1987 (PL 100-150).

The portions of the Middle and South Forks of the Kings River managed by the NPS begin in glacial lakes above timberline and flow through deep, steep-sided canyons, over falls and cataracts, and eventually become an outstanding whitewater rafting river in Sequoia National Forest. Both the Middle and South Forks flow through extensive and spectacular glacial canyons. All of the Middle Fork is within designated wilderness, as is the upper portion (24.1 miles) of the South Fork. The lower segment of the South Fork canyon is known as the Kings Canyon, giving the park its name. The Kings Canyon, including the Cedar Grove developed area, is the only segment of the Kings River accessible by motor vehicle and has been classified as a recreational river.

The Wild and Scenic Rivers Act does not prohibit development along a river corridor; however, the act does specify guidelines for the determination of appropriate actions within the bed and banks of a Wild and Scenic River (National Park Service [NPS], Department of Interior [DOI], U.S. Forest Service [USFS], U.S. Department of Agriculture [USDA] 1982). As the designated manager for the South Fork of the Kings River upper segments within the boundaries of Kings Canyon National Park, the NPS must prepare a Section 7 determination on all proposed water resources projects, including bridges and other roadway construction/reconstruction projects, to ensure they do not directly and adversely impact the free-flowing condition or the values for which the river was designated.

WILD AND SCENIC RIVER DESIGNATION

In 1987, Congress designated the Middle and South Forks of the Kings River Wild and Scenic to protect the free-flowing condition and to protect and enhance their unique values for the benefit and enjoyment of present and future generations (16 USC 1271). Section 2 of the Wild and Scenic Rivers Act requires that designated rivers be classified and administered as Wild, Scenic, or Recreational river segments, based on the condition of the river corridor at the time of boundary designation. The classification of a river segment indicates the level of development on the shorelines. Classifications are defined in the act as follows:

Wild river areas – Those rivers or section of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and water unpolluted. These represent vestiges of primitive America.

Scenic river areas – Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational river areas – Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Under the Wild and Scenic Rivers Act, outstandingly remarkable values (ORVs) are defined as those resources that are river-related and rare, unique, or exemplary in a regional or national context. The lower segment of the South Fork of the Kings River, which includes the project area has the following ORVs: scenic, recreational, and geologic (NPS 2007).

The lower segment of the South Fork of the Kings River is 7.6 miles long. The river corridor boundary extends 0.25 mile on each side of the river. This recreational river segment flows through the floor of the Kings Canyon. The area is open seasonally, typically from May through October. There are limited areas of development, managed river-based recreation, and defined river access points. The use of flotation devices, boats, or rafts is prohibited on the South Fork of the Kings River from Bubbs Creek Bridge downstream to the Kings Canyon National Park boundary. Regular inspection of the condition of resources, including the river's outstandingly remarkable values is required. Hiking and other forms of recreation, such as fishing, picnicking, and bicycle use are allowed within the river corridor, pursuant to existing regulations.

SECTION 7(A) DETERMINATION

The Section 7(a) evaluation for the Bridge Replacement at Cedar Grove project is based on guidance provided within the Wild and Scenic Rivers Act: Section 7 Technical Report (Interagency Wild and Scenic Rivers Coordinating Council 1997), Appendix C, Evaluation Procedure under the heading Direct and Adverse. The direct and adverse evaluation procedure is carried out for water resources projects within the Wild and Scenic River boundary of the designated river. The NPS, in cooperation with the Federal Highway Administration/ Central Federal Lands Highway Division (FHWA/CFLHD) is proposing to replace the 142-foot bridge spanning the South Fork of the Kings River at Cedar Grove Village in Sequoia and Kings Canyon National Parks (parks), Fresno County, California. The proposed bridge replacement project would occur within the Wild and Scenic boundary of the South Fork of the Kings River (Figure 1). The Section 7 determination process presented herein applies only to the preferred alternative of the environmental assessment (EA).

PURPOSE AND NEED FOR ACTION

PURPOSE

In its current condition, the bridge does not provide a safe, durable, sustainable passage for vehicles at Cedar Grove, is unsafe for pedestrians and bicycles, and restricts the free-flowing character of the South Fork of the Kings River, particularly during high water and flood events.

The purpose of this project is to maintain and enhance access for visitors, park employees, and concessioners in the Cedar Grove area, in a safe and sustainable manner.

The second purpose of this project is to meet the mandates of the Wild and Scenic Rivers Act (16 U.S.C. 1271 et seq.). The 7.6-mile segment of the South Fork of the Kings River, including the project area, is a designated Wild and Scenic River, classified as a recreational

river segment. In accordance with the Wild and Scenic Rivers Act, this area will be administered in such a manner as to protect and enhance the values that caused it to be included, without limiting other uses that do not substantially interfere with public use and enjoyment of these values. NPS *Management Policies* directs the parks to take no management actions that could adversely affect the values that qualify a river for the national wild and scenic rivers system (4.3.4) (NPS 2006).

The final purpose of this project is to implement a component of the approved FGMP/EIS for the parks. The FGMP/EIS calls for the replacement of the Cedar Grove Village Bridge to reduce impacts and increase sustainability (NPS 2007).The FGMP/EIS directs the parks to protect the free-flowing character of river areas and to maintain and enhance the integrated ecological functions, natural hydrological, and free-flowing condition of park rivers.

NEED

The need for the action is to reconstruct the bridge in a manner that would improve sustainability and meet standard weight requirements, to continue to provide for visitor and park access, while protecting and enhancing the values of the Cedar Grove Bridge, in accordance with the *Wild and Scenic Rivers Act*, NPS policies, and park goals.
The objectives of this project are to:

- Provide safe vehicular, pedestrian, and bicycle access to Cedar Grove Village in a manner that lessens resource impacts and improves sustainability;
- Provide utilities to the Cedar Grove Village in a safe and sustainable manner;
- Improve the Kings River's ability to flow in a wild and natural course and better protect the river's ORVs;
- Protect other natural and cultural resources in the project area, including floodplains, riparian areas, and wetlands; and
- Protect park facilities downstream of the bridge.

The NPS identified and evaluated a range of alternatives to improve structural bridge deficiencies, improve natural and cultural resources protection, enhance visitor experience, and improve park operations.

The EA evaluates two alternatives, including Alternative A, the no action alternative. Alternative B, the management preferred alternative, includes the replacement of the existing 142-foot bridge with a new 280-foot bridge in the same location. The bridge would have steel girders placed on concrete bridge abutments and two concrete piers, and steel handrails with stone masonry pillars. The bridge would have a concrete deck to accommodate two 11-foot travel lanes and a sidewalk with a curb on the south side. Both roadway approaches would also be reconstructed.

The management preferred alternative includes the installation of a wood reinforced floodplain to restore this reach of the South Fork of the Kings River, which is classified as recreational river, according to the Wild and Scenic Rivers Act. The current bridge length is inadequate and restricts the flow area of the river, particularly during high water and flood events. This has resulted in sediment deposition and erosion upstream of the bridge, altering the natural river channel and fluvial processes. Occasional maintenance and repairs, including bank hardening and the placement of rip rap, has been necessary to protect the bridge. Lengthening the bridge should reduce constriction and improve the natural processes in this reach of the river.

DESCRIPTION OF MANAGEMENT PREFERRED ALTERNATIVE

The management preferred alternative consists of four elements: 1) preparing for demolition, construction, and restoration, 2) removing the existing bridge, 3) constructing the new bridge, and 4) protecting the bridge and restoring the river. These project elements are interrelated and would be undertaken as one project under the management preferred alternative, which is described in detail in the EA. The bridge cross section associated with the preferred alternative would be wider than the existing channel section immediately downstream of the bridge, which would remove the majority of the flow constriction, except for the bridge piers. It would also allow the passage of a 100-year flood. With the current bridge removed and the installation of a reinforced floodplain, the downstream channel geometry would act to constrict the flow rather than the bridge. The management preferred alternative would meet the parks' planning objective of improving the river's ability to flow in a wild and natural course to better protect the river's ORVs as a National Wild and Scenic River. It would also provide a safe, durable, sustainable passage for vehicles, pedestrians, bicycles, and utilities crossing the South Fork of the Kings River at Cedar Grove Lodge.

Construction to replace the Cedar Grove Bridge and restore the South Fork of the Kings River would take place over a two year period starting in late summer or fall. Construction could begin or extend beyond the timeframe identified previously based on weather conditions, but only after the superintendent receives a formal written request and grants permission.

RELATIONSHIP TO PAST AND FUTURE MANAGEMENT ACTIVITIES

A Comprehensive River Management Plan for the Wild and Scenic Rivers in Sequoia and Kings Canyon National Park was completed as part of the general management planning process in 2006. Future road work, bridge construction, and other maintenance activities along the South Fork of the Kings River could impact wild and scenic rivers. The current bridge has an inadequate opening size which constricts the flow area during large flood events. This has caused sediment deposition immediately upstream of the bridge and erosion along the bank upstream of the bridge, altering the natural river channel and fluvial processes (FHWA 2006b).

Past Actions

Past actions include activities that influenced and affected the current conditions of the environment in the vicinity of the project area. These actions primarily include disturbances to the landscape around the Cedar Grove Bridge from the construction of park and concessioner facilities (e.g. Cedar Grove Village), maintenance and repair of the bridge, and maintenance and protection of the Kings Canyon Scenic Byway outside park boundaries. These past actions contributed to both temporary and long-term disturbances to the existing quality of the natural environment. The following past actions were identified near the project area.

Development of the Cedar Grove Area for Public Use

This includes construction of concessioner and park facilities, trails, roads and removal of vegetation in the early to mid-20th century. The Kings Canyon Scenic Byway was also established and is managed by Hume Lake Ranger District of Sequoia National Forest/Giant Sequoia National Monument.

Construction of Bridges on the South Fork of the Kings River

The Lower South Fork of the Kings River Bridge (hereinafter referred to as the Lower Bridge) was constructed in 1950. The bridge has concrete abutments, two piers, a gauging station, and utilities within the bridge structure.

The Cedar Grove Bridge was constructed in 1939. This bridge has concrete abutments and one pier. The west abutment was armored with riprap in 1997.

The Upper South Fork of the Kings River Bridge (hereinafter referred to as the Upper Bridge) was constructed in 1953. The bridge has concrete abutments and one pier.

None of the abutments or piers on the upper and lower bridges is armored with riprap.

Maintenance of Existing Roads, Bridges, and Facilities

The Cedar Grove Bridge has had periodic maintenance to fix the sidewalk/catwalk and wooden decking, to patch holes, and to reconstruct the rail along the road shoulder. Also, past storm events have caused damage to the bridge and resulted in minor work in 1982 and major repair work in 1997.

The Kings Canyon Scenic Byway, adjacent to the South Fork of the Kings River is managed by Hume Lake Ranger District of Sequoia National Forest/Giant Sequoia National Monument. There are various structures and facilities along the road, including a cave open to visitors, trailheads, and parking areas. The road has been protected in many areas by riprap.

Emergency Repairs of Bridges and Roads Due to Past Flooding

The Cedar Grove area has experienced at least nine very large flood events in the past 70 years (1937, 1950, 1955, 1966, 1969, 1978, 1982, 1984, and 1997). During the 1997 flood event log jams formed at both the upper and lower bridges. Park staff removed the debris threatening the bridge piers. In addition, the west abutment of the Cedar Grove Bridge was damaged, the water line under the bridge was broken, and the sewer line was exposed. Park staff reconstructed the western approach to the bridge and armored the abutment.

Current and Future Actions

The following current and reasonably foreseeable future actions were considered in the cumulative effects analysis. Ongoing activities that have the potential to affect resources include the ongoing maintenance of existing roads, bridges, facilities (asphalt patching and striping) and general wear and tear from visitor use. Other activities include roadside brushing, culvert flushing and cleaning, and road striping (cyclic every 2 to 5 years). Chipsealing the road is planned for 2010. Work would occur in June/July 2010 and would be timed to avoid the bridge project. However, there may be some overlap. Utility maintenance projects may also occur.

The Canyon View Campground upstream from the Cedar Grove Bridge is scheduled to be rehabilitated in September of 2009 or 2010. This project would include repairing the road and campsites. This project is scheduled for the fall to reduce impacts on visitors. The project will improve campground facilities and visitor experience. Since the project would be completed in September there would be little effects to the visitor except for an improved campground and experience when the project would be completed.

The implementation of all future projects is contingent on receiving adequate funding.

ANALYSIS OF THE EFFECTS OF THE PROPOSED ACTIVITY

Within-Channel Conditions

The bridge cross section associated with the management preferred alternative would be wider than the existing channel section immediately downstream of the bridge, which would remove the majority of the flow constriction, except for the bridge piers. It would also allow the passage of a 100-year flood.

The installation of the reinforced floodplain would restore the channel to a configuration that more closely resembles the channel geometry in this reach and may reduce the deposition potential upstream of the bridge. It would improve the hydraulic transition into the bridge section (FHWA 2006b).

The demolition of the existing bridge, the construction of the new bridge, and the installation of the reinforced floodplain, which are described in detail above, would require excavation and filling within the channel of the river, causing an increase in turbidity and conductivity. These impacts on water quality would be short-term, minor, and adverse. However, the stabilization of the river banks and the installation of the reinforced floodplain should have a long-term, beneficial impact on water quality.

Riparian and Floodplain Conditions

The management preferred alternative involves the removal of an existing bridge, the construction of a new bridge, and the installation of a reinforced floodplain in the riparian zone and floodplain of the South Fork of the Kings River. The Cedar Grove Bridge crosses the South Fork of the Kings River between the Sentinel Campground and the Cedar Grove Lodge. When the bridge was originally constructed, a significant portion of the channel was filled in to form the left (west) abutment, which has caused a flow constriction at the bridge and an increase in water surface elevations upstream of the bridge. The 100-year floodplain has an average width of 240 feet through the project reach (FHWA 2006a).

As described above, the management preferred alternative would improve the river's ability to flow in a wild and scenic course and would improve the condition of the floodplain, which has become degraded as a result of the existing bridge. The replacement of the existing 142-foot bridge with a 280-foot long bridge would ease the constriction of the channel, improving the overall channel geometry and flow of the river.

Existing vegetation consists of native and non-native grasses, native herbaceous plants, willows, and trees. By installing the reinforced floodplain described above and planting willows on the new restoration, wildlife habitat would be improved and flood energy would be dispersed. The restoration project would also prevent river bank erosion. Other disturbed areas would also be revegetated to match the surrounding native vegetation.

Upland Conditions

The bridge profile grade would be sloped to accommodate the sewer to the lodge on the east side of the bridge. The slope would ensure gravity flow of the sewer. To minimize disturbance and impacts on soils and vegetation outside of the road prism that would be caused by this realignment, a cut on the west approach would be needed. This cut would be gradual, starting just east of the entrance to the Sentinel campground to just short of the bridge. Up to 10 trees may need to be removed to accommodate the cut. If possible, tree wells would be installed to protect the larger diameter trees that would not be removed. The cut bank would be stabilized by a native rock wall varying from approximately one to four feet high.

The cut would require the realignment of the campground multi-use trail approximately fifty feet to the west of the current alignment to ensure a gradual slope to the crosswalk on the road. Approximately ninety linear feet of new multi-use trail would be constructed, and the old path would be removed. It would require that the multi-use trail alignment on the other side of the road be moved to meet the new crosswalk. The multi-use trail realignments would be routed around trees, and the original multi-use trail would be removed and revegetated to match the surrounding vegetation. During construction, a multi-use trail detour would be delineated. All bare ground caused by the abovementioned activities would be revegetated to match the surrounding vegetation.

The removal of up to 10 trees should not result in a significant change in vegetation composition or age structure. Soils would be compacted from equipment, but most of the soil compaction would occur within the prism of the bridge approaches. The changes in upland conditions would not influence archeological, cultural, or other identified significant resource values.

Hydrologic or Biologic Processes

The South Fork of the Kings River is one of the large river systems with headwaters within the parks. The quantity of surface flow follows an annual cycle, with the lowest flows typically occurring in August and the highest flows in May or June. Spring flows are primarily snowmelt from glaciers and snowpack at higher elevations; by late August, the source is primarily groundwater (NPS 2007).

The portions of the Middle and South Forks of the Kings River managed by the NPS begin in glacially-carved lakes above timberline and flow though deep, steep-sided canyons, over falls and cataracts, and eventually come together at the main stem of the Kings River in the Sequoia National Forest (NPS 2007). No recording stream gauges were identified along this reach of the South Fork of the Kings River that could be used to verify the computed flows. The Watershed Modeling System was used to compute the drainage basin and discharges using a US Geological Survey regional regression equation for the Sierra Nevada. The data input to the equation consisted of site specific historic rainfall values from the National Oceanic and Atmospheric Administration (NOAA) Atlas 2, the Precipitation-Frequency Atlas of the Western United States. The drainage basin is approximately 357 square miles (FHWA 2006a). The results of the peak flow discharge computations are in Table 1.

Table 1. USGS Regression Equation Computed Discharges for the South Fork Kings River at Cedar Grove Bridge (FHWA 2006A).

Recurrence Interval (yrs)	Discharge (cfs)
2	1,600
5	3,935
10	5,800
25	9,980
50	13,300
100	18,500
500	33,300

The management preferred alternative is expected to improve the hydrologic processes as compared to the existing bridge. The bridge cross section associated with the preferred alternative would be wider than the existing channel section immediately downstream of the bridge, which would remove the majority of the flow constriction, except for the bridge piers. It would also allow the passage of a 100-year flood.

The removal of the existing bridge, the construction of the new bridge, and the installation of the reinforced floodplain would require the construction of a temporary access route to the stream to allow equipment access to the abutments, the piers, and the reinforced floodplain area. This may involve adding fill material to the riverbank and streambed. Work on the west side abutment would include the removal of approximately 350 cubic yards of material. Water would also be diverted around the construction area, resulting in a temporary change in hydrologic processes. The access route and the water diversion would only be construction related and would be removed upon completion of the project, allowing the river to flow unimpeded.

The construction of the new piers would continue to result in scour around the piers. However, this would not be significantly different than the scour around the existing pier.

The management preferred alternative would have short-term adverse effects on streamside vegetation, wildlife, fish, and nutrient cycling due to construction disturbance. However, the revegetation of the reinforced floodplain and the river banks should provide additional streamside vegetation and habitat for wildlife having long-term, beneficial effects.

Magnitude and Spatial Extent of Potential Off-Site Changes

Very few other projects are planned in the Cedar Grove Area. As stated in the Relationship to Past and Future Management Activities section, most of the projects that would be done in the Cedar Grove area include routine maintenance and repair. The rehabilitation of the Canyon View campground upstream from the Cedar Grove Bridge would be the largest project in the near future. None of these projects would have a significant impact or change that would influence other parts of the river system.

In the EA cumulative effects analysis for water quality and hydrology and streamflow characteristics, it was determined that these off-site projects would have short-term, minor, adverse impacts on these resources, which would contribute slightly to the overall, adverse cumulative effects of the project.

Time Scale the Previous Sections are Likely to Occur

The project work would be completed over the course of two seasons. In-water work would be done during low flow. In this case, low flow is defined as anything less than the ordinary high water mark (OHWM). The two-year flood delineation is being used as a rough estimate of the OHWM for this project. A two-year flood is the level of flood water expected to be equaled or exceeded every two years on average. Low flow periods generally occur in August and September.

Compare Project Analyses to Management Goals

Management objectives for the South Fork of the Kings River Wild and Scenic River are provided in the Sequoia and Kings Canyon National Parks Final General Management Plan and Comprehensive River Management Plan/Environmental Impact Statement (FGMP/EIS) (NPS 2007).

The parks' final FGMP/EIS provides the following direction relative to the Cedar Grove Area transportation infrastructure and the South Fork of the Kings River:

- Protect the free-flowing character of the river areas
- Assess river, floodplain, wetland, and riparian areas – Maintain and enhance the integrated ecological functions to protect and enhance the natural hydrologic and free-flowing condition of the rivers
- Replace Cedar Grove Village Bridge (and other bridges as needed), with replacement locations assessed for less resource impacts and improved sustainability (NPS 2007).

The management preferred alternative would replace the Cedar Grove Village Bridge and in doing so, would improve the free-flowing character of the river. The installation of the reinforced floodplain would reduce river bank erosion along the west bank of the river and also improve the free-flowing character of the river by stabilizing the river channel.

SECTION 7(A) DETERMINATION

Impact Intensity and Description

Negligible:	Impacts would be barely detectable to most visitors and would have no discernible effect on a river's free-flowing character and ORVs.
Minor:	Impacts would be slightly detectable to some visitors but are not expected to have an overall effect on a river's free-flowing character and ORVs.
Moderate:	Impacts would be clearly detectable by many visitors and could have an appreciable effect on a river's free-flowing character and ORVs.
Major:	Impacts would have a substantial and noticeable effect on most visitors or the river's free-flowing character and ORVs.

Duration

Short-term – impacts occurring during, immediately following, and up to a year after construction
Long-term – impacts taking more than one year to recover

ALTERNATIVE B: NPS MANAGEMENT PREFERRED ALTERNATIVE

Impacts on free-flowing character

Impact of existing bridge removal

Under the management preferred alternative, the removal of the steel beams below the bridge deck, abutments, wingwalls, and piers would require the temporary diversion of the river on each side of the channel upstream and below the bridge. These measures would temporarily restrict flow, resulting in short-term, moderate adverse impacts on the free-flowing character of the river.

Impact of new bridge construction

The construction of the new bridge would require the temporary diversion of the river, reducing its free-flowing nature as stated above. After construction is completed, the bridge cross section would be wider than the existing channel section, which would remove the majority of the flow constriction, except for the bridge piers. This would allow for a more free-flowing condition than the previous conditions as well as passage of a 100-year flood, resulting in long-term beneficial effects in the project area.

Bridge protection and river restoration

During the restoration project, the river would be diverted as described above. Construction would occur during low flow, and mitigation would further reduce impacts. The excavation of

the depositional area, relocation of the material to the highly-eroded area along the west bank of the river, and installation of the reinforced floodplain would stabilize the river bank, protect the existing floodplain downstream of the bridge location, increase channel roughness to reduce flow velocities, and realign the channel to a more natural course (FHWA 2006a).

The in-stream work during the existing bridge removal, new bridge construction, and bridge protection and river restoration would result in short-term, moderate adverse impacts on the free-flowing character of the river, and long-term, beneficial effects to the free-flowing character due to the replacement of the existing bridge with a longer bridge. The longer bridge would allow the river to flow more freely through the bridge section than the existing bridge. The reinforced floodplain would have a long-term beneficial effect by restoring natural hydrologic processes in the river.

Impacts on ORVs

Scenic

Impact of existing bridge removal
The removal of the existing bridge would cause local impacts on the river's scenic ORV from construction disturbance in the project area. These impacts would be local, short-term, minor to moderate, and adverse. Because these impacts would be short-term, they would not intrude on or unreasonably diminish the scenic ORV present in the area once the project is completed.

Impact of new bridge construction
The construction of the new bridge would cause local, short-term, minor to moderate, adverse impacts on the river's scenic ORV from construction disturbance. The new bridge is larger and more complex than the existing bridge, causing a long-term, moderate, adverse impact on the scenic ORV of the river. This effect would be localized and would not have a segment-wide effect. Though the effect would be adverse, it would not intrude on or unreasonably diminish the scenic ORV present in the area because it is replacing an existing bridge, and would be offset by the improved free-flow of the river resulting from the project.

Bridge protection and river restoration
The protection of the bridge and installation of the reinforced floodplain would cause local, short-term, minor to moderate, adverse impacts on the river's scenic ORV from construction disturbance. To minimize long-term adverse impacts, the abutment slopes would be covered with material that would be similar to the existing cobble of the riverbed. The reinforced floodplain would serve to stabilize the river channel, and eliminate the eroded west bank. The disturbed area and reinforced floodplain would be revegetated, and would eventually (1 to 2 growing seasons) blend in with the surrounding landscape, and would result in long-term beneficial effects on the scenic ORV.

Geologic Processes/Conditions

Impact of existing bridge removal, new bridge construction, and bridge protection and river restoration
The removal of the existing bridge, the construction of the new bridge and bridge protection and river restoration would cause local impacts on the river's geologic ORV from construction disturbance around the project area. Given that the channel is largely gravel and cobbles, the use of heavy equipment would likely alter the channel bottom only slightly in the sections it traverses. The river banks would be revegetated upon completion of the construction. These impacts would be local, short-term, negligible adverse and would not intrude on or unreasonably diminish the geologic ORV.

Recreation

Impact of existing bridge removal, new bridge construction, and bridge protection and river restoration

The removal of the existing bridge, the construction of the new bridge and bridge protection and river restoration would cause local, short-term minor adverse impacts on the river's recreational ORV from bridge and instream closures related to construction at the project area. There would be other opportunities for visitors to continue to access the river outside the project limits.

The replacement of the bridge would provide a long-term, safe, durable, sustainable passage for vehicles, pedestrians, and bicycles crossing the South Fork of the Kings River at Cedar Grove Village providing a localized, long-term beneficial effect on recreation ORVs.

Cumulative Impacts. Past, present, and reasonably foreseeable future actions with the potential to affect the river include past and future road and bridge maintenance, emergency stabilization, the existence of other bridges on the designated wild and scenic river corridor, and the past placement of riprap on the road corridor outside of the park boundary. These actions have affected the free-flowing character and ORVs of the river as stated under the no action alternative.

The management preferred alternative would result in short-term minor to moderate adverse effects on the free-flowing character and ORVs as a result of construction actions, but in the long-term, would result in beneficial effects to the free-flowing character and ORVs from an increased bridge span, reduced maintenance, and by restoring the natural hydrologic function of the river with the placement of the wood reinforced floodplain. However, some would argue the presence of any bridge on a wild and scenic river results in a minor to moderate adverse effect on the scenic ORV. Overall, the management preferred alternative would result in short-term moderate adverse cumulative effects and long-term moderate adverse and beneficial cumulative effects to the free flowing character and ORVs.

Conclusion. The management preferred alternative would have short-term, moderate, adverse impacts on the free-flowing character and ORVs of the river from the project work. There would be long-term, moderate, adverse impacts on the scenic ORV from the continued existence of the bridge on the river. The management preferred alternative would result in localized, long-term, beneficial effects to the free-flowing condition of the river as a result of installing a longer bridge, and long-term beneficial effects on recreation ORVs by provide safe passage across the bridge. Cumulative effects would be short-term moderate adverse to the free flowing character and ORVs, and long-term moderate adverse and beneficial.

Because there would be no major, adverse impacts on wild and scenic rivers, there would be no impairment of park resources and values. Because the impacts previously described (1) are not inconsistent with the park's purpose and values, (2) do not prevent the attainment of desired future conditions for natural and cultural resources, (3) do not create an unsafe environment, (4) do not diminish opportunities for future enjoyment of the park, and (5) do not unreasonably interfere with park programs or activities, an appropriate use, or concessioner or contractor operations, there would be no unacceptable impacts on wild and scenic rivers under the management preferred alternative.

Mitigation Measures

General Measures

- Construction limits would be identified with construction tape or similar material prior to any construction activity. Workers would be instructed to avoid conducting activities and disturbing areas beyond the construction limits.
- All tools, equipment, barricades, signs, surplus materials, demolition debris and rubbish would be removed from the project work limits upon project completion. Any asphalt surfaces damaged during the project would be repaired to its original condition.
- Contractors would be required to properly maintain construction equipment and generators (i.e., mufflers) to minimize noise from use of the equipment.
- All equipment on the project would be maintained in a clean and well-functioning state to avoid or minimize contamination from automotive fluids. All equipment would be checked daily.
- Materials would be stored, used, and disposed in a proper manner.
- A hazardous spill plan would be approved by the park prior to construction. This plan would state what actions would be taken in the case of a spill, notification measures, and preventive measures to be implemented, such as the placement of refueling facilities, storage, and handling of hazardous materials, etc.
- To reduce the potential for cement spills, a confined area with appropriate containment and erosion control measures would be designated in one of the staging areas for washing out cement trucks.
- Where appropriate and available "environmentally friendly" grease, hydraulic oil, and bar and chain oil would be used. These lubricants are vegetable or mineral oil based, less toxic and biodegradable.
- Best management practices (BMPs) for drainage and sediment control would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation in drainage areas. BMPs would include all or some of the following actions, depending on site-specific requirements:
- Disturbed areas would be kept as small as possible to minimize exposed soil and the potential for erosion;
- Waste, and excess excavated materials would be stored outside of drainages to avoid sedimentation. Silt fences, temporary earthen berms, temporary water bars, sediment traps, stone check dams, or other equivalent measures would be installed around the perimeter of stockpiled fill material;
- Regular site inspections would occur during construction to ensure that erosion-control measures were properly installed and are functioning effectively.
- A portable holding basin would be utilized at the concrete batch plant to contain waste from cleaning out the concrete trucks.

Water Quality, Hydrology and Stream Flow Characteristics

- All work in the streambed would be performed during periods of low flow, generally from late summer through early fall.
- Prior to working in the stream, the stream flow would be diverted around the work area. Temporary sediment traps, erosion check screens, coffer dams, water-inflated coffer dams (a re-useable water inflated dam – a single tube devise with internal support for stability) and/or filters would be used to divert the main flow and reduce turbidity downstream from the project site. All in-stream devices would be removed between construction seasons and disturbed areas would be stabilized to prevent erosion.

Diversions would be constructed in a manner that would provide a continuous flow to downstream reaches.

- Temporary work pads consisting of onsite alluvium, clean silt-free gravel, or river rock would be built for large stationary equipment working in the stream channel to provide a stable substrate.
- All heavy equipment operated in the stream channel would drive slowly and carefully to minimize sediment movement and resulting increased turbidity.
- At all upland cut and fill areas, erosion and sedimentation control measures would be implemented to minimize impacts on water quality. These measures would remain until final site stabilization (all soil disturbing activities at the site have been completed and that a uniform perennial vegetative cover with a density of at least 70% of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed).
- Water needed for construction and dust control would come from the existing developed water systems within the parks and would not be diverted from surface waters.
- The sewer lines would be encased in the appropriate grade sleeve, according to state regulations, to protect the lines and prevent any potential leakage from impacting water quality. Upon relocation, all utility lines would be monitored regularly to ensure all lines are operational.

Wild and Scenic Rivers

- To preserve the aesthetic qualities of the scenic river, the cut bank on the west approach to the bridge would be stabilized by a native rock wall.
- To maintain a consistent appearance between the bridge and the walkway and minimize the visual contrast of the bridge, the retaining wall on the east side of the wall would be covered with a rock veneer.
- Any riprap placed on the soil surface would consist of materials that blend with the surrounding landscape.

Floodplains/Wetlands

- Floodplain and wetland protection BMPs outlined in Appendix F would be adhered to, thus limiting impacts on wetlands and floodplains.

Vegetation, Non-Native Species, and Soils

- A plant survey would be done prior to project construction to determine the presence of rare plants. If rare plants are found, they would be relocated if possible, as determined by park botanist.
- A revegetation plan would be developed for the purposes of restoring native vegetation to the project site, minimizing erosion, and stabilizing the bank and disturbed areas.
- Riparian vegetation would be planted as soon as possible to minimize sedimentation associated with bare ground. A primary revegetation technique for willows would be cutting and planting willow stakes. This would be done concurrently with the contractor's placement of riprap to allow the stakes to be placed between cracks in the rock. Other types of vegetation would also be planted, such as cottonwoods and pines, where appropriate.

- Topsoil would be removed if appropriate as determined by the park botanist, from areas of construction and stored for later use. After project completion, ground surface treatment may include grading to natural contours, replacing topsoil, incorporating native litter and duff layer over salvaged topsoil and, where necessary, seeding and planting.
- Reclaimed areas would be monitored after construction to determine if reclamation efforts are successful or if additional remedial actions are necessary. Remedial actions may include installation of erosion-control structures, reseeding, topsoil placement, and/or replanting the area, hand-pulling, and controlling non-native plant species with herbicide.
- In an effort to avoid introduction of non-native/noxious plant species, no hay or straw bales would be used during revegetation or for temporary erosion control.
    - All construction equipment would be pressure washed/steam cleaned prior to entering the parks to ensure that all equipment and machinery are weed free. Construction equipment would be inspected by NPS staff prior to entering the parks to ensure compliance with cleanliness requirements. Inadequately cleaned equipment would be rejected.
    - All haul trucks bringing fill materials (excluding asphalt) from outside the parks would be covered to prevent seed transport and dust deposition along the road corridor.
    - Equipment and disturbance would be limited to within the construction limits, and to roadsides, bridge areas, and staging areas
    - All fill, rock or additional topsoil needed for project work would be obtained from NPS approved weed free sources. If weed free quarry sources cannot be located, the contractor would be required to scrape away topsoil at the quarry and/or acquire freshly exposed material with minimal seed deposition and washing of coarse materials (rip rap).
    - Disturbed areas would be monitored for up to three years following construction to identify growth of noxious weeds or non-native vegetation. Treatment of non-native vegetation would be completed in accordance with NPS 77-7, Integrated Pest Management Manual.

Visitor Experience and Health and Safety

- Visitors, park and concessioner employees, and others would be notified when road closures or traffic delays would occur. Information on the project schedule would be provided to neighboring communities, on the park website, at visitor centers and entrance stations.
- The bridge would be closed during construction to protect park visitors and employees. Signs and construction fencing would be used to prevent entry and crossings by visitors. The North Side Road would be used as a detour for the Cedar Grove Lodge during this time.
- Signs would be posted at the Lewis Creek Trailhead Parking Area to warn people to use caution during the detour.

Wildlife

- Construction activities would be limited to daylight hours with the exception of when water and sewer would be transferred, which could occur at night.

- To reduce noise disturbance and limit impacts on breeding avian and mammalian species, all tree removal work would be done in the fall or early spring, if possible. If trees with a dbh of 24 inches or greater need to be removed outside of this time frame, trees would be identified for removal and evaluated for nesting activity by a park biologist. If nesting is found, the tree would be left in place or removed outside of the breeding season.
- Feeding or approaching wildlife would be prohibited by construction personnel.
- Wildlife collisions would be reported to park personnel.
- Park biologist or ranger would be notified if bears loiter in the area and appropriate response would be provided.
- A litter control program would be implemented during construction to eliminate the accumulation of trash. All food would be stored in bear proof containers except when it is being consumed. Food stored in vehicles would be in bear proof containers. Spilled food would be cleaned up. Food related garbage would be removed from the project area daily and taken to an animal resistant dumpster within the park.

Air Quality

- Dust control would occur, as needed, on active work areas where dirt or fine particles are exposed.
- The contractor would not leave vehicles idling for more than five minutes when parked or not in use.
- Asphalt plants would be located outside the parks. Small quantities of asphalt may be stored for a short-term at designated staging areas.

Cultural Resources

- The park archeologist would monitor initial ground disturbing activities outside of the river channel.
- Should any archeological resources be uncovered during construction, work would be halted in the area and the park archaeologist, Office of Archeology and Historic Preservation (OAHP), and appropriate Native American Tribes would be contacted for further consultation.
- Park cultural resources staff would be available during construction to advise or take appropriate actions should any archeological resources be uncovered during construction.
- In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.
- The NPS would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Contractors and subcontractors also would be instructed on procedures to follow in case previously unknown archeological resources are uncovered during construction.

Section 7(a) Determination

Provided the above requirements are fully and completely implemented for the duration of the project, and the project meets water quality requirements, pursuant to Section 7(a) of the Wild and Scenic Rivers Act, the NPS has determined, on behalf of the Secretary of the Interior, that this project would not have a direct and adverse effect on the free-flowing character and ORVs of the South Fork of the Kings Wild and Scenic River.

Any changes to any elements of the project or the scheduling of in-stream work, as described in the package submitted for evaluation and/or above, would require consultation with the NPS and may require additional Section 7(a) review/approvals.

REFERENCES

Federal Highway Administration

———.2006a. Memorandum: Kings River Cedar Grove Village Bridge Replacement – Bridge Configuration Review. On file at the Denver Service Center, National Park Service.

———.2006b. Bridge Inspection Report Summary, Cedar Grove Bridge. On file at the Denver Service Center, National Park Service.

Interagency Wild and Scenic Rivers Coordinating Council. 1997. Section 7 Technical Report. Available on the Internet: http://www.rivers.gov/publications/section-7.pdf, National Park Service, U.S. Department of Interior

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———. 2007 Final General Management Plan/Environmental Impact Statement. Sequoia and Kings Canyon National Parks.

———. 2006 NPS *Management Policies*. U.S. Department of the Interior, National Park Service.

United States Code (USC). 16 USC §§ 1271 et seq. *Wild and Scenic Rivers Act* (October 2, 1968).