



Appendix A: Standard Mitigation Measures

Appendix A

Mitigation Measures Applicable to All Action Alternatives

The National Park Service places a strong emphasis on avoidance, minimization, and mitigation of impacts. To help ensure that field activities protect natural, cultural, and social resources and the quality of the visitor experience, mitigation measures have been developed. The following section discusses mitigation measures that would occur prior to, during, and after construction of specific management actions.

Topic	Mitigation Measure	Responsibility
Construction Mitigation Measures	Prior to entry into the park, steam-clean heavy equipment to prevent importation of non-native plant species, tighten hydraulic fittings, ensure hydraulic hoses are in good condition and replace if damaged, and repair all petroleum leaks.	Yosemite National Park, Project Manager; Contractor
	Inspect the project to ensure that impacts stay within the parameters of the project area and do not escalate beyond the scope of the environmental assessment, as well as to ensure that the project conforms with all applicable permits or project conditions. Store all construction equipment within the delineated work limits. Confine work areas within creek channels to the smallest area necessary.	Yosemite National Park, Project Manager; Contractor
	Implement compliance monitoring to ensure that the project remains within the parameters of National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) compliance documents.	Yosemite National Park, Project Manager; Contractor
	Provide a project orientation for all construction workers to increase their understanding and sensitivity to the challenges of the special environment in which they will be working.	Yosemite National Park, Project Manager
	If deemed necessary, demolition/construction work on weekends or federal government holidays may be authorized, with prior written approval of the Superintendent.	Yosemite National Park, Project Manager
	Remove all tools, equipment, barricades, signs, surplus materials, and rubbish from the project work limits upon project completion. Repair any asphalt surfaces that are damaged due to work on the project to original condition. Remove all debris from the project site, including all visible concrete, timber, and metal pieces.	Yosemite National Park, Project Manager; Contractor
	The park shall develop a Communications Strategy Plan to alert necessary park and Concessioner employees, residents and visitors to pertinent elements of the construction work schedule.	Yosemite National Park, Project Manager
Hydrology and Water Quality	Implementation of a stormwater pollution prevention program (SWPPP) would designate construction best management practices to be used to control the sources of fine sediment and to capture and filter it before entering the river. A SWPPP will be implemented for construction activities to control surface runoff, reduce erosion, and prevent sedimentation from entering waterbodies during construction. A SWPPP will define the characteristics of the site, identify the type of construction that will be occurring, and describe the practices that will be implemented to control erosion and the release of pollutants in stormwater.	Contractor

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	<p>All disturbed soil and fill slopes shall be stabilized in an Contractor appropriate manner.</p> <p>If special-status plant species are identified within the construction disturbance zone, in particular within restoration and revegetation areas, avoid special-status plant populations to the extent feasible during construction activities.</p> <p>If it is not feasible for construction activities to avoid special status plant species, species conservation measures will be developed in coordination with Yosemite National Park natural resources staff. Measures may include salvage of special-status plants for use in revegetating disturbed areas and transplantation of special-status plants wherever possible using methods and monitoring identified in the revegetation plan, monitoring to ensure successful revegetation, protection of plantings, and replacement of unsuccessful plant materials if practicable.</p> <p>Provide proper and timely maintenance for vehicles and equipment used during construction to reduce the potential for mechanical breakdowns.</p> <p>Use silt fencing at drainages to prevent construction materials from escaping work areas.</p> <p>Delineate wetlands and apply protection measures during construction. Wetlands shall be delineated by qualified National Park Service staff or certified wetland specialists and clearly marked prior to work. Perform activities in a cautious manner to prevent damage caused by equipment, erosion, siltation, etc.</p> <p>During heavy equipment use, spill kits are on site to prevent water contamination in the case of a spill. To minimize soil compaction when accessing riparian or riverine habitat unhardened by imported rock, track mats are placed on the ground, onto which the equipment will be driven. In areas impacted with imported fill and rock revetment, soils are decompacted as a final egress with equipment.</p>	<p>Contractor</p> <p>Yosemite National Park, Project Manager; Contractor</p> <p>Yosemite National Park, Project Manager; Contractor</p> <p>Yosemite National Park, Project Manager; Contractor</p> <p>Contractor</p> <p>Yosemite National Park, Project Manager; Contractor</p> <p>Contractor</p>
<p>Wildlife (including special status wildlife)</p>	<p>Schedule construction activities with seasonal consideration of wildlife lifecycles to minimize impacts during sensitive periods (i.e., after bird nesting seasons, when bats are neither hibernating nor have young, etc.).</p> <p>Limit the effects of light and noise on adjacent habitat through controls on construction equipment.</p> <p>Provide adequate education and enforcement to limit construction worker activities that are destructive to wildlife and habitats.</p>	<p>Yosemite National Park, Project Manager</p> <p>Yosemite National Park, Project Manager; Contractor</p> <p>Yosemite National Park, Project Manager</p>
<p>Federal and State Permit Requirements</p>	<p>The NPS will apply for and comply with all federal and state permits required for construction-related activities, including Clean Water Act Section 401 and 404.</p>	<p>Yosemite National Park, Project Manager</p>

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Historic Properties	<p>To minimize the effect of new culvert construction on historic road character, the new walls should be stone (not veneer), constructed using compatible stone in a form and masonry pattern that is compatible with the nearby historic period masonry.</p> <p>Prior to any ground disturbing activities associated with revetment, further analysis and possible documentation at each site would be required in order to assess potential adverse effects to historic resources.</p> <p>As per Section 106 of the NHPA, prior to construction or demolition activities, the Park shall conduct a review of the project area in review of impacts to historic buildings, structures, and districts within the project area of potential effect (APE). This will include a review of existing known historic resources in a review of their continued integrity and eligibility for listing in the National Register, identification of currently unknown historic properties within the APE, determination of potential adverse effects and resolution of those effects in compliance with 36 CFR Part 800 – Protection of Historic Properties. Every effort would be made to avoid adverse impacts. These efforts could include screening and/or sensitive design that would be compatible with cultural landscape resources. Should avoidance of adverse impacts not be possible, documentation and treatment would be identified to reduce the intensity of the impact.</p>	<p>Yosemite National Park, Project Manager</p> <p>Yosemite National Park, Project Manager</p> <p>Yosemite National Park, Project Manager</p>
Archeological Resources	<p>Train all members of the restoration/construction teams in proper handling of inadvertent discovery of archaeological resources. Training would involve information regarding the types of archeological materials that are likely present in the specific project area, how to identify archeological materials, and the procedures for contacting the appropriate parties in the event that archeological materials are encountered during restoration/construction activities.</p> <p>All restoration/construction personnel would be required to participate in the training, and written guidelines would be prepared and distributed to aid in identification of archeological materials and to inform workers of the procedures to follow in case of a discovery or potential discovery. If buried archeological resources such as flaked stone or groundstone, historic debris, building foundations, midden soils or human bone are inadvertently discovered during ground-disturbing activities, work shall stop in that area and within a 100-foot radius of the find until a qualified archeologist can assess the significance of the find.</p> <p>Inadvertent discoveries would be treated in accordance with 36 CFR 800.13 (Protection of Historic Properties: Post-review discoveries). The archeological resource would be assessed for its eligibility for listing on the National Register in consultation with the SHPO and representatives of traditionally associated American Indian tribes and groups (if it is an American Indian archeological site), and a determination of the project effects on the site would be made. If the site would be adversely affected, a treatment plan would also be prepared as needed during the assessment of the site's significance. Assessment of inadvertent discoveries may require archeological excavations and/or archival research to determine resource significance. Treatment plans would fully evaluate avoidance, project redesign, and data</p>	<p>Yosemite National Park, Project Manager</p>

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	<p>recovery alternatives before outlining actions proposed to resolve adverse effects.</p> <p>If human skeletal remains are encountered, protocols under federal and state law would apply. All work shall stop in the vicinity of the discovery, and the find would be secured and protected in place. The appropriate county coroner (Mariposa or Merced) and Park Archeologist would both be immediately notified. If a analyses determine that the remains are American Indian, and that no further coroner investigation of the cause of death is required, the coroner would then be required to contact the NAHC (pursuant to Section 7050.5[c] of the California Health and Safety Code) and the County Coordinator of Indian Affairs. The remains would also be treated in accordance with the Native American Graves Protection and Repatriation Regulations at 43 CFR 10.4 (Inadvertent discoveries).</p> <p>Management actions involving moderate to severe ground disturbance (trail reroutes; formalization of social trails; excavations for subsurface utilities; development of campgrounds; removal of abandoned infrastructure and/or facilities, construction of buildings, structures, parking lots, and roads; topographic recontouring; decompaction and plant salvage; and actions that may focus visitor use at areas with sensitive surface resources) within or adjacent to the boundaries of known archeological sites shall be preceded by intensive surface survey and/or controlled subsurface testing as well as archeological and American Indian resource monitoring, as determined appropriate given past studies and findings.</p> <p>Initial limited testing shall be conducted in the area(s) proposed for ground disturbance, to first determine if the presence of site components can be verified. If so, the methods of achieving the proposed action may be modified and/or relocated, if possible. If effects could not be avoided, archeological treatment measures would be site-specific and contingent on previous studies' results and the level of work proposed.</p> <p>Management actions involving minor ground disturbance within or adjacent to the boundaries of known archeological sites shall be conducted with an archeological monitor present to ensure that activities (restoration, revegetation of denuded areas, removal of hazard fuels or unwanted vegetation, etc.) do not adversely affect the integrity of site stratigraphy or horizontal artifact context. Monitoring may also be included as part of a treatment plan for individual resources following initial testing as per AR-MM-2.</p> <p>The archeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis. If the monitor determines that any portion of the proposed action could have an adverse effect on the site, alternative methods of accomplishing the action shall be discussed with the restoration personnel.</p>	<p>Yosemite National Park, Project Manager</p> <p>Yosemite National Park, Project Manager</p>
<p>Dust Abatement Measures</p>	<p>Cover and/or seal truck beds and stockpiles to minimize blowing dust or loss of debris.</p> <p>Limit truck and related construction equipment speeds in active construction areas to a maximum of 15 miles per hour and strictly adhering to park regulations and posted speed limits in other areas while inside park boundaries.</p>	<p>Contractor</p> <p>Contractor</p>

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	Maintain adequate dust suppression equipment and using clean water to control excess airborne particulates at staging areas, active construction zones, and unpaved roads leading to/from active construction areas.	Contractor
Emergency Notification Measures	<p>Develop an emergency notification plan that complies with park, federal, and state requirements and allows contractors to properly notify park, federal, and/or state personnel in the event of an emergency during construction activities. This plan will address notification requirements related to fire, personnel, and/or visitor injury, releases of spilled material, evacuation processes, etc. The emergency notification plan will be submitted to the park for review/approval prior to commencement of construction activities.</p> <p>Notify utilities prior to construction activities Identify locations of existing utilities prior to removal activity to prevent damage to utilities. The Underground Services Alert and NPS maintenance staff will be informed 72 hours prior to any ground disturbance. Construction-related activities will not proceed until the process of locating existing utilities is completed (water, wastewater, electric, communications, and telephone lines). An emergency response plan will be required of the contractor.</p>	<p>Yosemite National Park, Project Manager</p> <p>Yosemite National Park, Project Manager</p>
Erosion Control Measures	<p>Use approved siltation and sediment control devices in construction areas to reduce erosion and surface scouring.</p> <p>Use approved siltation and sediment control devices appropriate to the situation in grading areas to capture eroding soil before discharge to riparian channels.</p> <p>Conserve and salvage topsoil for reuse. Materials will be reused to the maximum extent possible.</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p>
Hazardous Materials Measures	<p>An Oil and Hazardous Materials Spill Prevention, Control, and Countermeasure Plan shall be prepared by the Construction Contractor for the project to address hazardous materials storage, spill prevention and response. The Plan shall be submitted for park review and approval prior to construction.</p> <p>Store and use all hazardous materials in compliance with federal regulations. All applicable Materials Safety Data Sheets will be kept on site for inspection.</p> <p>Hazardous or flammable chemicals shall be prohibited from storage in the staging area, except for those substances identified in the Oil and Hazardous Materials Spill Prevention, Control, and Countermeasure Plan. Hazardous waste materials shall be immediately removed from project site in approved containers.</p> <p>Comply with all applicable regulations and policies during the removal and remediation of asbestos, lead paint, and polychlorinated biphenyls.</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>
Soundscapes	<p>Ensure that all construction equipment has functional exhaust/muffler systems.</p> <p>Submit a construction work plan/schedule that minimizes construction-related noise in noise-sensitive areas to the park for review/approval prior to commencement of construction activities.</p> <p>Use hydraulically or electrically powered construction equipment, when feasible.</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p>

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	Locate stationary noise sources as far from sensitive receptors as possible.	Contractor
	Limit the idling of motors except as necessary (e.g., concrete mixing trucks).	Contractor
	To the extent possible, perform all on-site noisy work above 76 A-weighted decibels (dBA) (such as the operation of heavy equipment) between the hours of 8:30 a.m and 5:00 p.m. to minimize disruption to nearby park users.	Contractor
Air Quality	<p>The Yosemite National Park and/or a contractor (as appropriate) shall implement and comply with a dust abatement program during construction. Measures include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • Water or apply soil stabilizers to disturbed areas; • Cover haul trucks; • Employ speed limits on unpaved roads; • Minimize vegetation clearing; • Re-vegetate post construction. <p>The Yosemite National Park and/or a contractor (as appropriate) shall implement equipment exhaust controls during construction. Measures include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to two minutes. Clear signage shall be provided for construction workers at all access points; • Require that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM; • Require all contractors use equipment that meets CARB’s most recent certification standard for off-road heavy duty diesel engines; • Require all equipment operations to occur during daytime hours to minimize effects of local inversions. 	<p>Yosemite National Park, Contractor</p> <p>Yosemite National Park, Contractor</p>
Scenic Resources Protection Measures	<p>Fence construction staging areas and construction activity areas to visually screen construction activity and materials.</p> <p>Consolidate construction equipment and materials to the staging areas at the end of each work day to limit the visual intrusion of construction equipment during nonwork hours.</p>	<p>Contractor</p> <p>Contractor</p>
Spill Prevention/Response Measures	<p>Develop and implement a comprehensive spill prevention/response plan that complies with federal and state regulations and addresses all aspects of spill prevention, notification, emergency spill response strategies for spills occurring on land and water, reporting requirements, monitoring requirements, personnel responsibilities, response equipment type and location, and drills and training requirements. The spill prevention/response plan will be submitted to the park for review/approval prior to commencement of construction activities.</p>	Contractor

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	<p>To minimize the possibility of hazardous materials seeping into Contractor soil or water, check equipment frequently to identify and repair any leaks. Standard measures include hazardous materials storage and handling procedures; spill containment. cleanup, and reporting procedures; and limitation of refueling and other hazardous activities to upland/nonsensitive sites. Provide an adequate hydrocarbon spill containment system (e.g., absorption materials, etc.) on site, in case of unexpected spills in the project area. Ensure equipment is equipped with a hazardous spill containment kit at all times. Ensure that personnel trained in the use of hazardous spill containment kits.</p>	Contractor
<p>Stormwater Pollution Prevention Measures</p>	<p>Develop and implement a comprehensive stormwater pollution prevention plan for construction activities that complies with federal and state regulations and addresses all aspects of stormwater pollution prevention. The plan will be submitted to the park for approval prior to construction activities. The plan will include measures such as:</p> <ul style="list-style-type: none"> • Take measures to control erosion, sedimentation, and compaction, and thereby reduce water pollution and adverse water quality effects. Use silt fences, sedimentation basins, etc in construction areas to reduce erosion, surface scouring, and discharge to water bodies. • To the extent possible, schedule the use of mechanical equipment during periods of low precipitation to reduce risk of accidental hydrocarbon leaks or spills. When mechanical equipment is necessary outside of low precipitation periods, use NPS- approved methods to protect soil and water from contaminants. • Dispose of volatile wastes and oils in approved containers for removal from construction sites to avoid contamination of soils, and drainages. Inspect equipment for hydraulic and oil leaks prior to use on construction sites, and implement inspection schedules to prevent contamination of soil and water Keep absorbent pads, booms, and other materials on site during projects that use heavy equipment to contain oil, hydraulic fluid, solvents, and hazardous material spills. 	Contractor
<p>Traffic Control and Visitor Protection Measures</p>	<p>Provide protective fencing enclosures around construction areas, including utility trenches to protect public health and safety.</p>	Contractor
<p>Transportation Measures</p>	<p>Install appropriate traffic signs.</p>	Yosemite National Park, Project Manager
<p>Utility Measures</p>	<p>Verify utility locations by contacting the Underground Services Alert prior to the start of construction.</p>	Yosemite National Park, Project Manager, Contractor
<p>Visitor Experience Measures</p>	<p>Limit construction activities to the off-season to allow for continued visitor access to the ski area during the winter.</p>	Yosemite National Park, Project Manager, Contractor
<p>Lightscaapes</p>	<p>All new sources of lighting, or substantial modifications to structures with existing sources of exterior lighting, shall conform to the standards set forth in the Yosemite Lighting Guidelines.</p>	Contractor

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Waste Management Measures	Require construction personnel to adhere to park regulations concerning food storage and refuse management.	Yosemite National Park, Project Manager, Contractor
	Properly secure trash during the workday and remove all trash from site at the end of each workday.	Yosemite National Park, Project Manager, Contractor
Vegetation	Park policy requires that all machinery brought in to the park is clean prior to entry and inspected by park staff to avoid introductions of invasive species. Restoration work frequently involves ground disturbance, which has the potential to introduce and spread non-native plant species. For ground disturbing projects, park staff will survey for and treat invasive plants before and after restoration activities following the guidance of Yosemite's 2011 Invasive Plant Management Plan.	Yosemite National Park, Project Manager
Monitoring	Ongoing monitoring undertaken by Yosemite's interdisciplinary Visitor Use and Impacts Monitoring Program regularly assesses conditions in meadows and along riverbanks, providing important information on the success of restoration efforts. In addition, the park performs regular monitoring for invasive plants, stock use impacts, wildlife abundance and diversity, and visitor experience. To evaluate the success of particular restoration actions, monitoring plans will be implemented specific to each restoration project. Geophysical and biological parameters will be monitored over time to determine restoration success and recovery rates. Pre and post-restoration vegetation and soil sampling and photo points are examples of monitoring to measure project success.	Yosemite National Park, Project Manager
Interpretation and Education	Restoration work provides many opportunities to teach other park employees and visitors about natural processes in Yosemite. Each restoration project incorporates an element of outreach or interpretation such as informative signs or self-guided nature trails. Biologists work closely with interpretive staff to disseminate messages to visitors regarding trails and areas that are currently closed due to ongoing restoration efforts.	Yosemite National Park, Project Manager