National Park Service
U.S. Department of the Interior
Sequoia and Kings Canyon National Parks
California

# FINDING OF NO SIGNIFICANT IMPACT

## Rehabilitation of a Water Distribution System Environmental Assessment / Assessment of Effect

Sequoia and Kings Canyon National Parks
April 2012

## INTRODUCTION

The National Park Service (NPS) prepared an environmental assessment/ assessment of effect (EA/AoE) that analyzed long-term options for addressing deficiencies in the existing water system that serves the Giant Forest, Wolverton, Lodgepole, Wuksachi, and the Red Fir maintenance area, within Sequoia National Park. The finding of no significant impact (FONSI), the non-impairment determination (Attachment A), and EA/AoE constitutes the record of the environmental impact analysis and decision-making process for this project. The EA/AoE analyzed the no action alternative and two action alternatives.

The intent of the environmental document was to develop a comprehensive water system design and rehabilitation plan prioritized by the most critical needs. The NPS will implement alternative C, the management- and environmentally-preferred alternative as described in the Rehabilitation of a Water System EA/AoE. The EA/AoE evaluated the environmental impacts associated with the full development of all project components identified in the alternative. Project components would occur in phases and be implemented as funding becomes available.

The project considers actions that require obtaining federal permits and permits from the state of California; therefore, the environmental document was prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). In addition, the process and documentation required for preparation of this environmental document will be used to comply with section 106 of the National Historic Preservation Act (NHPA), resulting in an EA/AoE.

## PURPOSE AND NEED FOR FEDERAL ACTION

The water distribution systems in the developed areas of Sequoia and Kings Canyon National Parks (parks or park) serve over 1.6 million visitors and employees annually. The majority of visitors spend time in the developed areas of the parks' located on the western slope of the Sierra Nevada. This project is located within Sequoia National Park, and encompasses the water distribution systems in and around Giant Forest, Wolverton, Lodgepole, Wuksachi, and the Red Fir maintenance facility. It is the largest water distribution system within the parks; serving the most people. During the summer months, when visitation is at its peak, this water distribution system serves approximately 2,900 visitors and employees daily.

The Environmental Protection Agency (EPA) and the California Department of Public Health (CDPH) set drinking water standards to protect public health by limiting the levels of contaminants permissible in drinking water. All utilities using surface water sources are required by the EPA to disinfect the water prior to delivery to their consumers. When disinfectants, such as chlorine, are used in the treatment of drinking water, they can react with naturally-occurring organic and inorganic matter to form disinfection byproducts. The EPA has set monitoring requirements and maximum contaminant levels for some of the more common disinfection byproducts, such as total trihalomethanes (TTHM) and haloacetic acid 5 (HAA5). Water quality can also be affected by the age of the water in the system. The extensive water system in the park consists of miles of piping. If the demand for water is low at the final destination, the water does not turnover adequately and continues to age in the water system. As the water ages, the chlorine residual in the water system is depleted which can lead to potential biological growth and the formation of disinfection byproducts. Results of water quality testing have shown that the park has exceeded the maximum containment levels for TTHMs and HAA5s in some locations, and is out of compliance with current State of California (state) drinking water standards.

The purpose of this project is to improve water quality to address code compliant issues with state drinking water standards and provide a dependable potable water supply, by rehabilitating the deteriorated water system in a manner that minimizes impacts to visitors and park and concessions staff; improves resource efficiency and sustainability; meets legal requirements; and, protects park resources. The following are specific need statements developed for the project.

**There is a need to meet state drinking water quality regulations.**
Due to the extensive water system and miles of piping, the demand for water at some of the more remote locations may not turn over adequately and water continues to age in the water system. As the water ages, the chlorine residual in the water system is depleted and can lead to biofilm growth and the formation of disinfection byproducts. Consequently, park staff has to maintain excessive chlorine residuals to retain potability. The high chlorine residuals have resulted in contributing to TTHM and HAA5 formation. In addition, the aging water lines create a chlorine demand themselves due to contamination caused by deterioration of the piping materials.

The CDPH has cited the parks' numerous times for exceeding maximum containment levels for TTHMs and HAA5s, and has requested that a permanent solution be engineered to address water quality issues.

The Lodgepole water treatment plant is over 50 years old and is an older style pressure filter that does not comply with the two-log removal of cryptosporidium as per the enhanced surface water treatment rule #1 enacted January 14, 2002 (Long Term 1 Enhanced Surface Water Treatment Rule – LT1ESWTR, 67 FR 1812, January 14, 2002, Vol. 67, no.9). The state has allowed interim operation of the facility as a "grandfathered" technology, however, officials could mandate replacement based on any future excursions from the water quality standards.

**There is a need to rehabilitate the aging and deteriorating water distribution system.**
Emergency repairs and maintenance to the deteriorated water distribution system are very costly. Frequent response to water line breaks is an inefficient use of staff time and defers work on other maintenance projects.

Frequent breaks and leaks in the water distribution system have resulted in system shutdowns for extended periods of time. Shutting the system down creates the potential for multiple points of direct contamination due to depressurization of the system and subsequent backflow.

**There is a need to reduce the risks associated with operating the water system.**
Confined spaces, high pressure exposure, and locating emergency breaks in sometimes adverse conditions over uneven and steep terrain, result in increased risks to employee safety.

NPS staff working on the water distribution system could be exposed to hazardous materials since these water distribution systems consist of a variety of materials used in the plumbing industry over the past 70 years, including leaded joint pipe.

Breaks and leaks in the water lines most often occur in the winter when staff is limited and it is very difficult for staff to locate and access the leaks in sometimes adverse weather conditions under up to eight feet of snow.

**There is a need to ensure uninterrupted potable water service and protect the health and safety of visitors and NPS and concessioner employees.**
The increasing difficulty of maintaining fire hydrants in fully operational status could result in danger to visitors, employees, and infrastructure resulting from the NPS's inability to respond to structural fires within the parks.

Periodic repairs to the water system results in shutdowns that inconvenience visitors, NPS and concession operations, and NPS and concessioner employee residents and their families.

**There is a need to establish a comprehensive plan and design of the water distribution system to be resource efficient.**
There was never an overall comprehensive plan and design completed on the water system that serves the Giant Forest, Wolverton, Lodgepole, Wuksachi, and Red Fir maintenance facility. Development of the water distribution system responded to water demands from reduced infrastructure in some areas and increased infrastructure in other areas, which resulted in inappropriately-sized water lines for the end use and need in some areas.

The design and operation of the water distribution system also needs to consider potential future build-out.

**There is a need to protect park resources.**
Emergency response and repairs can damage park resources from access to water line breaks in areas of difficult terrain and in ecologically sensitive areas. Records indicate that breaks, leaks, and other deficiencies in the water system result in one million gallons of water loss annually.

Park resources need to be protected from pipes leaking chlorinated water.

In accordance with NPS *Management Policies 2006*, "water systems will be designed and maintained to provide sufficient water to operate fire sprinkler systems and fire hydrants. . .water supply systems . . . must comply with all applicable state and federal health standards" (section 9.1.5.1). The *Safe Drinking Water Act*, *2007 Final General Management Plan/ Environmental Impact Statement* (GMP), and *Director's Order 83: Public Health* and *Reference Manuals* reinforce the need for this project.

**Project Objectives**
Specific project objectives were developed for the project, and are as follows:

- Provide high quality drinking water that meets or exceeds state drinking water regulations.

- Determine the most appropriate life-cycle solution that is durable and low in maintenance, and is the best solution to reduce operational and maintenance costs and inefficiencies.
- Develop a comprehensive design and plan that addresses immediate deficiencies, considers future build-out, and prioritizes work elements.
- Design the water system to be sustainable, resource efficient, and minimize impacts on park resources.
- Provide adequate and dependable water delivery to meet fire suppression capabilities.
- Ensure an uninterrupted potable water supply to minimize inconveniences to visitors, park and concessioner operations, and employee residents and their families.
- Provide a safe and healthy work environment.

## SELECTION OF THE PREFERRED ALTERNATIVE

The preferred alternative, alternative C- Improve Water Supply, is the selected alternative and there are no changes from the description of alternative C as presented in the EA/AoE. This alternative considers the immediate deficiencies of the water system, incorporates design elements that achieve a comprehensive design and plan that addresses future growth, and focuses on water supply improvements in an effort to improve water quality through decreasing the water age and controlling TTHM formation. The key feature associated with alternative C is the development of a new groundwater supply well at the Pinewood picnic area, located within the Giant Forest. Development of a separate well supply will eliminate the need to maintain the length of water line from the lower Sherman Tree parking area to the Giant Forest tank, and greatly reduce the water age and potential for TTHM formation. Critical components of the water system, including valves, piping, and other appurtenances, would be rehabilitated or replaced.

Rehabilitation and construction of all the identified components is not possible at this time due to funding limitations. Consequently, project components will be implemented in phases and are dependent on priority and acquiring additional funding. Specific project elements are distinguished by location and are listed below, followed by a short description of the methods and techniques to implement project work.

**Giant Forest**

Develop a new well at the Pinewood picnic area and obtain a domestic water supply permit from the CDPH. Construct a 2-inch direct supply water line from the well to the Giant Forest water storage tank, along the dirt access road. The well house will be approximately 12' x 20' (240 square feet), and the well head will be adjacent to the building.

Isolate the existing 4-inch water line along the Generals Highway near the lower Sherman Tree parking area. Maintain an emergency connection to the Wolverton water supply for system redundancy.

Install, approximately 6,000 linear feet of new 6-inch water line from the Giant Forest tank to Giant Forest Museum within the roadbed of the Generals Highway. The existing 6-inch water line that traverses the Giant Forest will be capped and abandoned in place.

Replace the existing Giant Forest water storage tank with a new storage tank.

Replace the 6-inch water line from the Giant Forest Museum to the upper Kaweah parking lot.

Replace the 6-inch water line from the Upper Kaweah parking lot to Beetle Rock.

Replace the 6-inch water line from the Upper Kaweah parking lot to the Lower Kaweah comfort station with a slip-lined 2-inch water line.

Isolate the abandoned 6-inch water line over to the old lodge area. Cut and cap the valve vault near the Big Tree Trail parking area, and replace the valve vault with buried valves.

**Lodgepole**

Replace the Silliman water intake structure, concrete dam, and associated 300 linear feet of piping; and, replace or rehabilitate the sediment settling structure ("sandbox").

Relocate the 8-inch water line north of the Lodgepole Market that is close to an eroding slope along the south side of the Marble Fork River. Relocation will be approximately 20 feet to the south of the existing route.

Repair the 4-inch water line between the campground and residences to reestablish a looped distribution system.

Install a new 6-inch water line over the Marble Fork Bridge along Generals Highway and abandon in place the existing water line that crosses under the Marble Fork of the Kaweah River.

Replace the existing Lodgepole-Wolverton interconnection valve vault with a new direct feed connection from Wolverton to the Lodgepole tank fill line at the Lodgepole water treatment plant. This will be used as a back-up water source for the Lodgepole area and allow for the Lodgepole water treatment plant to be shut-down in the winter when there is low water demand in the Lodgepole area.

Replace the existing Lodgepole water treatment plant with a new facility capable of meeting state water quality regulations.

**Wolverton**

Install a new disinfection system at the Wolverton water treatment plant to minimize the formation of disinfection byproducts and extend the life of the disinfectant in the distribution system.

Clean out water lines (pigging).

Replace three pressure reducing valves along Generals Highway between Wolverton and the Giant Forest.

Replace two pressure sustaining valves and associated check valves along the old Army Road between Wolverton and Lodgepole.

Provide flow meters for all distribution systems that utilize the Wolverton water supply, including Wuksachi, Wolverton corrals, Upper Sherman, and Lower Sherman.

Slipline the existing 6-inch water line from the Lodgepole-Wolverton split, up to the Wuksachi water storage tanks with a 3-inch line to reduce water age.

Replace the surface water diversion structure in Wolverton Creek.

**Wuksachi/ Red Fir maintenance area**

Clean the Wuksachi tanks.

Clean water distribution lines in the Wuksachi area.

Replace the utility-hole cover entry and provide large traffic rated vault covers for the four buried valve vaults near the Wuksachi water tanks to eliminate confined space entry and to facilitate removal of valves and piping.

Isolate with a gate valve, the 10-inch water line that extends beyond the Wuksachi Lodge and continues out to several empty parking lots originally designed for future expansion of the Wuksachi services area.

Rehabilitate the Wuksachi and Red Fir meter vaults that are located at the bottom of the road leading to the Wuksachi tanks.

Replace all below-ground fire hydrant assemblies in the Wuksachi area with conventional above-ground fire hydrant assemblies and flag marking for locating in winter snow conditions for (approximately 17).

Provide a fire hydrant assemblies blow-off at the helipad near Red Fir to help maintain residuals at the Red Fir area.

Clean the distribution line from the Red Fir maintenance area to the meter vault at the bottom of the access road near the Wuksachi tanks.

Install a new disinfectant dosing station at the bottom of the access road to the Wuksachi tanks to reduce chlorine requirements at the Wolverton water treatment plant and to improve the residual at Wuksachi and the Red Fir maintenance facility.

**Methods and Techniques**

Rehabilitation and Replacement of Water Distribution System Components

Replacement and rehabilitation of water lines, water storage tanks, valves, vaults, FHAs, and other water system appurtenances will be within previously disturbed locations or existing utility corridors. Water system components will be replaced "in kind" or upgraded to current industry standards. Rehabilitation methods include sliplining, pipe-bursting, and "pigging" (cleaning out the waterlines). Sliplining and pipe-bursting will be used to replace and rehabilitate existing lines at their current locations. The sliplining method will be used to rehabilitate buried pipelines where the existing pipe is large enough for a smaller, more adequately sized pipe to be inserted. The pipe-bursting method will be used where the replacement pipe is the same size as the existing pipe. Pipe-bursting breaks the old pipe by applying force against the pipe and pushes pipe fragments into the surrounding soil, while simultaneously pulling a new pipe in its place. The "pigging" technique is an internal pipe-cleaning process that pushes a small device through the interior of the pipes to clean them. In all three methods, excavation will occur at insertion and receiving pits, and where valves, bends, or appurtenances are located. The dimension of the excavation

pits will be approximately 10' long × 5' deep × 4' wide. The material of the new water piping will be high density polyethylene pipe.

Trenching and excavation will be necessary to access and extract existing appurtenances (e.g. valves, vaults, tanks, piping), and to access the existing water lines for rehabilitation methods. The work zone, for installation of new piping (e.g. pipe along the Generals Highway), will be approximately 15-feet wide (to accommodate for equipment passage and spoils placement), and 5-feet deep to achieve the necessary depth below the frost line.

New Buildings

New buildings include a chlorine dosing station near the Wuksachi water tanks access road, a building to replace the existing Lodgepole water treatment plant, and a well house at Pinewood picnic area adjacent to the new groundwater supply well. The chlorine dosing station will be approximately 12' × 20' (240 square feet). The new water treatment plant (720 square feet) will be 20% larger than the existing building, to accommodate a new water disinfection system. The well house will be approximately 12' × 20' (240 square feet). Buildings will be located within previously disturbed areas requiring minor grading and other site preparation. The old water treatment plant will be dismantled and disposed of appropriately. New structures will adhere to the parks' *Architectural Character Guidelines* (NPS 1989), with the purpose of maintaining the rustic park architecture and character.

Replace Surface Water Diversion Structures

The surface water diversion assemblies at Silliman Creek and Wolverton Creek will be replaced. Wedgewire screen structures will replace the existing water intake structures, the concrete dams will be removed and reconstructed, and associated clogged piping and appurtenances will be replaced. During construction activities, water will be diverted around the work site to a point below the construction area. The existing water intake structures and dams will be dismantled and removed from the project area and a new dam and water intake will be constructed. The temporary diversion will be removed and the area restored as necessary.

Access, Staging Areas, and Equipment

Equipment and materials will be staged in previously disturbed areas, such as parking areas, to the greatest extent practicable. Access to most work areas is possible from roadways and trails, or existing utility corridors. A variety of equipment, including backhoe, loader, excavator, and forklift, will be utilized during rehabilitation and replacement activities. An all terrain vehicle (ATV), helicopter, or pack stock may be used to transport materials and equipment needed for actions associated with replacing the surface water diversion structures.

**Sustainability and Design**

The NPS has adopted the concept of sustainable design as a guiding principle of facility planning and development. The objectives are to minimize adverse effects on natural and cultural values; reflect their environmental setting; maintain and encourage biodiversity; construct and retrofit facilities using energy-efficient materials and building techniques; operate and maintain facilities to promote their sustainability; and, illustrate and promote conservation principles and practices through the sustainable design and ecologically sensitive use. Alternative C incorporates a plan for a sustainable water system that features resource efficient design elements. New structures will adhere to the parks' *Architectural Character Guidelines* (NPS 1989), with the purpose of maintaining the rustic park architecture and character.

Water System Design

The CDPH has adopted regulations on water system demand, storage, supply, piping, and pressure. The regulations are defined under Title 22- Social Security (Title 22) Division 4, Chapter 16- California

Waterworks Standards. These regulations were used in the basis of design and evaluation of the water system project. Modeling of the water system considered the following:

*Water Demands*. Water demands are used to size and evaluate supply storage, and distribution requirements. The average day domestic demand, peak day domestic demand, and fire demand were used to evaluate the Wolverton and Lodgepole water systems. Water production records from the Wolverton and Lodgepole water treatment plants were used to develop the average day and peak day domestic demands from the system. Typically, municipalities would reference the California Fire code to establish fire flow and duration requirements; however, a rural system, such as the Wolverton water system, would have difficulty achieving the fire flow and duration requirements of this code. Therefore, fire demand and duration were developed based on National Fire Protection Association (NFPA) 1142 with the assistance of the NPS Fire Protection Engineer.

*Water Supply and Storage*. The water supply capacity should not be less than the peak demand of the water system. Combined domestic and fire storage was used to evaluate the capacities of the existing water storage tanks.

*Water Distribution and System Pressure*. The criteria for the distribution piping system followed the general recommendations for pipe size to the greatest extent practicable. However, because of the rural nature of the water system, Title 22 allows for a reduction in the pipe size when a Registered Engineer designs the piping and confirms that minimum pressures are maintained according to relevant regulations.

## MEASURES TO MINIMIZE OR AVOID ENVIRONMENTAL HARM

Throughout the planning process, mitigation measures were identified and have been incorporated into the selected alternative (alternative C- preferred alternative) to avoid, eliminate, or reduce impacts below a significant level. All mitigation measures which are incorporated in the selected alternative are summarized in the matrix below.

**Mitigation Matrix**

| MITIGATION TOPIC | MITIGATION MEASURES | RESPONSIBILITY |
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| **General Measures** | Construction zones outside of the existing disturbed area will be identified and fenced with construction tape or some similar material prior to any construction activity. The fencing will define the construction limits and confine activity to the minimum required for construction.<br><br>All protection measures will be clearly stated in the construction specifications/ special construction requirements, and workers will be instructed to avoid conducting activities beyond the construction limits, as defined. This does not exclude necessary temporary structures such as erosion control fencing.<br><br>All tools, equipment, barricades, signs, surplus materials and rubbish will be removed from the project work limits upon project completion. Any asphalt surfaces damaged due to work on the project will be repaired to original condition. All demolition debris (e.g., old water lines, appurtenances, water tanks, valves, packaging materials, trash) will be disposed of at appropriate areas outside the parks' or stockpiled at approved locations within the parks' to be used in future projects. When possible, debris will be disposed of at a materials recycling facility. | NPS Project Manager and Contractor |

| MITIGATION TOPIC | MITIGATION MEASURES | RESPONSIBILITY |
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| | Where appropriate and available "environmentally friendly" grease, hydraulic oil, and bar and chain oil will be used. These lubricants are vegetable or mineral oil based, less toxic, and biodegradeable.<br><br>All equipment on the project will be maintained in a clean and well-functioning state to avoid or minimize contamination from automotive fluids and inspected prior to entering the parks. All equipment will be checked daily by the contractor and documented in daily reports. | |
| | A hazardous spill plan will be in place, stating what actions will 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. Any spills of hazardous materials, fuel, etc., will be immediately reported to the parks' hazardous material spills and safety officer. | NPS Project Manager; NPS Safety Officer; Contractor |
| | Site designs and plans for future actions identified in this EA/AoE, will be reviewed for consistency. Additional compliance will be initiated if activities go beyond the scope of this document, or if unforeseen issues arise. | NPS Project Manager; NPS Environmental Protection Specialist |
| **Soils and Vegetation** | Staging areas for materials and construction equipment, storage, and turnarounds will utilize previously disturbed areas to the greatest extent practicable.<br><br>All equipment will be pressure washed before entering the park for the first time to remove all dirt and plant parts; subsequent entries will not require pressure washing unless the vehicle shows signs of mud, plant material, or other substances that could be considered harmful. The NPS Project Manager will inspect equipment for compliance prior to entry into the park, and reject equipment that is not adequately clean.<br><br>Damage to residual vegetation will be avoided or minimized by: proper type and size of equipment; pre-identification of travel routes; protective barriers around individual and group of trees; hand-digging under high value (e.g. sequoia) trees; and, contract penalty clauses for tree and vegetation damage.<br><br>Any trenching operations (e.g. installing and accessing water lines, replacing water storage tanks and vaults) will be located to minimize disturbance to established vegetation and avoid large diameter trees to the extent possible. Equipment will be used that allows the operator to detect the presence of tree roots prior to damaging them. Roots less than 4 inches in diameter will be given a clean straight cut to prevent root rot. When roots 4 inches in diameter and larger are encountered during trenching operations, they will be retained by hand-digging the trench beneath the root. As the trench is dug, the excavated material will be stored adjacent to the disturbed areas. After trenching is completed, bedding will be placed and compacted in the bottom of the trench and the pipe installed in the bedding. Backfilling and compaction will begin immediately after the pipe is placed into the trench, and the trench surface will be returned to preconstruction contours.<br><br>Standard erosion control measures such as silt fences and/or sand bags will | NPS Project Manager; Contractor |

| MITIGATION TOPIC | MITIGATION MEASURES | RESPONSIBILITY |
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| | be used to minimize any potential soil erosion. Silt fencing fabric will be inspected weekly or after every major storm. Accumulated sediments will be removed when the fabric is estimated to be approximately 75% full. Silt removal will be accomplished in such a way as to avoid spillage.<br><br>Vegetation impacts and potential compaction and erosion of bare soils will be minimized by salvaging topsoil from disturbed areas. Topsoil will be removed from these areas of construction, stored, and replaced at the end of the project. Soil will be de-compacted without harming major tree roots, before placing topsoil. The topsoil will be re-spread in as near the original location as possible.<br><br>Litter and duff will be removed from project areas and stored for later replacement over topsoil.<br><br>In an effort to avoid introduction of non-native plant species, no hay bales will be used during revegetation or for temporary erosion control.<br><br>Revegetated areas will be monitored for success rates and to ensure that erosion is not occurring. Remedial actions will be implemented, as necessary, and could include installation of additional erosion control structures, reseeding and/or replanting areas, and controlling non-native species. | |
| | Sources of rock, sand, gravel, earth, soil, or other imported natural material will be inspected for invasive non-native plants prior to acceptance. The contractor shall submit to the NPS Contracting Officer a list of proposed sources for import materials 30 calendar days in advance of importing material. The list shall include the end use and any temporary storage requirements of those materials. NPS Natural Resources staff will inspect sources of materials that pose a risk, either by their end use or storage requirements, of allowing invasive non-native plants (also known as noxious weeds) to establish in the park. Materials may be rejected if non-native invasive plants are present at the source and seeds could be present in the material.<br><br>At the discretion of the NPS Contracting Officer, potentially contaminated materials may be accepted if mitigating measures are implemented. Mitigation might include stripping the top 12 inches of source material, requiring fresh material stored less than 1 month, or sterilizing the material. Contaminated materials that contain fines and have an end-use on the surface will require sterilization before importing to the park. Import material shall be shipped directly from the source to the park without intermediary storage or staging. Shipping vessels shall be covered to prevent spillage or blowing of their contents while in transit.<br><br>Materials must also be transported and stored such that they will not acquire invasive non-native plant seeds from adjacent vegetation. | NPS Project Manager; NPS Contracting Officer; Contractor; NPS Natural Resources staff; |

| MITIGATION TOPIC | MITIGATION MEASURES | RESPONSIBILITY |
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| | Existing populations of invasive non-native vegetation will be removed prior to project activities, and appropriate monitoring and follow-up treatment will be conducted after project completion.<br><br>Staging areas and project work areas will be surveyed for invasive non-native plants one to three years after project completion. | NPS Natural Resources staff |
| | All trenching restoration operations will follow guidelines approved by park staff. These guidelines will minimize disturbance to soils and vegetation from construction activities, and will restore affected areas to their original form wherever possible. Excavated material will be windrowed in the construction zone. Although soil windrowed during construction is susceptible to some erosion, such erosion would be minimized by placing silt fencing, as required, adjacent to the excavated soil. Excavated soil will be windrowed only as long as it takes to dig the trench and install the water line. Further, once construction is completed and disturbed surfaces recontoured, erosion mats or other erosion control measures will be used to protect bare, exposed soils from erosion until revegetation takes place.<br><br>Excess material removed (e.g. water line pipes, appurtenances, rock, soil) will be disposed of at appropriate areas outside the park or stockpiled at park approved upland locations within the park to be used in future projects. Fill material needed beyond that produced from construction activities will be taken from park-approved sources outside the park. If there is a need to import topsoil, such topsoil will be certified free of noxious plant species and imported from sources approved by the parks' natural resources staff.<br><br>A revegetation strategy will be developed for disturbances outside of existing road corridors. All disturbed areas will be restored as nearly as possible to preconstruction conditions shortly after construction activities are completed. The NPS Natural Resources staff will be consulted prior to any reseeding or replanting efforts. | NPS Project Manager; NPS Natural Resources staff; Contractor |
| **Water Resources** | Storing of hazardous materials and fueling of all tools and equipment will be restricted to park-approved equipment staging areas. Spilled hazardous materials will be cleaned up immediately and will not be allowed to seep into the soil or reach open water sources.<br><br>Construction crews will use appropriate methods for human waste treatment.<br><br>Standard erosion-control measures and sedimentation control will be implemented to minimize impacts to water quality.<br><br>Water needed for construction and dust control will come from the existing developed water systems within the parks and will not be diverted from streams. | NPS Project Manager; Contractor; NPS Safety Officer |

| MITIGATION TOPIC | MITIGATION MEASURES | RESPONSIBILITY |
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| | A monitoring strategy will be developed for the water systems on Silliman and Wolverton Creeks. Current technology will be integrated into the design of the new structures to allow for the monitoring of water flows. This monitoring program will help the parks determine the levels of acceptable withdrawals under different precipitation regimes. | NPS Natural Resources staff; NPS Water Treatment Operators |
| **Wetlands** | Care must be taken to avoid any rutting caused by vehicles or equipment. Heavy equipment used in wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve preconstruction elevations.<br><br>Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway or wetland.<br><br>Appropriate erosion and siltation controls must be maintained during construction, and all exposed soil or fill material must be permanently stabilized at the earliest practicable date.<br><br>Structure or fill must be properly maintained so as to avoid adverse impacts on aquatic environments or public safety.<br><br>Whenever possible, excavated material must be placed on an upland site. However, when this is not feasible, temporary stockpiling of excavated material in wetlands must be placed on filter cloth, mats, or some other semi-permeable surface, or comparable measures must be taken to ensure that underlying wetland habitat is protected. The material must be stabilized with filter cloth, or other appropriate means to prevent reentry into the waterway or wetland.<br><br>Temporary stockpiles in wetlands must be removed in their entirety as soon as practicable. Wetland areas temporarily disturbed by stockpiling or other activities during construction must be returned to their pre-existing elevations, and soil, hydrology, and native vegetation communities must be restored as soon as practicable. | NPS Project Manager; Contractor |
| **Wildlife** | A litter control program will be implemented during construction to eliminate the accumulation of trash. All food will be stored in bear proof containers except when it is being consumed. Food stored in vehicles will be in bear proof containers. Spilled food will be cleaned up. Visitors in traffic delays will be educated by NPS staff, when available, to not approach or feed wildlife. | NPS Project Manager Contractor |
| **Air Quality** | Dust control will occur, as needed, on active work areas where dirt or fine particles are exposed.<br><br>Idling regulations must be followed and exceeded if possible. The Contractor will not leave vehicles idling for more than five minutes when parked or not in use. | NPS Project Manager; Contractor |
| **Soundscapes** | Most construction activity will be limited to daylight hours. Some night work may be necessary for installation of the waterline within the roadbed of Generals Highway. To minimize visitors' and residents' exposure to unnatural sounds, construction near campgrounds, lodging, and employee | NPS Project Manager; Contractor |

| MITIGATION TOPIC | MITIGATION MEASURES | RESPONSIBILITY |
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| | housing areas will occur during daylight hours.<br><br>Construction-related noise will be mitigated through use of state-of-the-art noise reduction technology on construction equipment to the maximum extent possible, to minimize the amount of noise from construction activities.<br><br>Contractors will be required to properly maintain construction equipment (i.e., mufflers) to minimize noise from use of the equipment. | |
| **Visual Resources** | Any appurtenances and buildings will have design features to soften their appearance and blend into the surrounding terrain. Areas disturbed by project activities will be revegetated and rehabilitated to pre-work conditions. New structures will comply with the parks' *Architectural Character Guidelines.*<br><br>Recycled products will be used when possible. Nontoxic products will be used and design would strive for a high level of energy efficiency.<br><br>Any lighting, such as security lighting, will be directional and shielded to prevent intrusions into the night sky. | NPS Project Manager; Contractor |
| **Cultural Resources** | Should unknown archeological resources be encountered during project implementation, work will be halted in the discovery area, the site secured, and the parks' archeologist notified. The parks' archeologist or a qualified representative will examine the area as soon as possible and will follow the requirements of the NHPA, and any other applicable cultural resource laws, as needed. Work could resume only after an appropriate mitigation strategy is developed in consultation with the California SHPO and after archeological clearances are obtained.<br><br>In compliance with the *Native American Graves Protection and Repatriation Act* (NAGPRA), the NPS will notify and consult concerned Native American tribal representatives for the proper treatment of human remains, funerary, and sacred objects should these be discovered during the project.<br><br>Should construction activities or project work inadvertently harm a cultural resource, work would stop in the area and the parks' Cultural Resource Specialist will be contacted. Consultation with the SHPO, tribes, and/or other interested parties will be conducted, as necessary and appropriate. | NPS Archeologist; NPS Project Manager; Contractor |
| **Visitor Safety and Experience** | Construction activities will be planned to minimize any procedure that might displace normal visitor access or impact their experience.<br><br>One lane of traffic will remain open during the installation of a new waterline within the Generals Highway, in the Giant Forest area. Traffic delays will be a maximum of one hour. When delays are necessary, traffic will be released through the construction zone on the hour. Closures will be limited to weekday closures from 6 a.m. Monday to 12 p.m. Friday with weekend closures limited to short delays to account for the possibility of single lane travel. Some night work may be required, but will be limited to | NPS Project Manager; Contractor |

| MITIGATION TOPIC | MITIGATION MEASURES | RESPONSIBILITY |
|---|---|---|
| | the greatest extent practicable.<br><br>Construction activities occurring near residential or visitor overnight-use areas will be scheduled to occur during the daytime. | |
| | During project implementation, visitors will be informed of construction activities via press release, visitor center postings, and other educational contacts. Where possible, visitors will be told of alternatives to avoid noise and access intrusions.<br><br>Visitors will be notified when road closures or traffic delays will occur and information will be posted in neighboring communities, on the park websites, at visitor centers, and entrance stations.<br><br>The parks will provide information (e.g. brochures, signs, news releases) to inform visitors, concessioners, USFS, and employees of alternative routes and project schedule. | NPS Project Manager; NPS Public Affairs Specialist; NPS Staff |
| **Park Operations** | Delays for emergency response vehicles will be kept to a minimum by having the emergency responders notify the traffic monitors via park radio/frequency immediately when the vehicle is dispatch, thus allowing approximately ten minutes to clear the road before the arrival of the emergency vehicle. | NPS Division of Visitor, Fire, and Resource Protection; Contractor |
| | The appropriate volume of water to maintain water supply use by visitors, residents, and employees, would be stored and available during construction activities. | NPS Project Manager; Contractor |

## ALTERNATIVES CONSIDERED IN THE EA/AOE

In addition to the selected alternative, the EA analyzed two alternatives.

Under the no action alternative, alternative A, no comprehensive design would be developed to address the immediate deficiencies of the water system, prioritize work elements and rehabilitation needs, or consider potential future expansion. No extraordinary management action or rehabilitation effort would be taken. Maintenance and repairs to the existing water system would be on a case-by-case basis as leaks and failures are detected, in response to emergencies, and, as long as replacement parts are available. The parks' water system would continue to degrade and be non-compliant with state drinking water regulations, fire codes, and NPS policies.

Under alternative B, Replace Distribution Lines and Improve Water Disinfection, no new water source would be developed. Instead, the primary components of this alternative considered cleaning and replacing older/biofilmed water distribution lines throughout the Wolverton water system, improving water disinfection, and installing new water lines at Wuksachi.

## ALTERNATIVES CONSIDERED BUT DISMISSED FROM CONSIDERATION

**Wolverton Water Treatment Plant to Supply All Water**
An improvement option was explored to have the Wolverton water treatment plant supply all water to facilities in the Giant Forest, Wolverton, Lodgepole, and Wuksachi, and the Red Fir maintenance facility. Water modeling results and a separate evaluation of water system demands and supply capabilities were used to determine the viability of this water system improvement option. This option was eliminated from further analysis because water modeling results determined that Wolverton water treatment plant cannot provide adequate supply of water to meet peak day demands to include any potential build-out of the Wuksachi visitor services area by the concession operator. The evaluation of supply and demand indicated that the Lodgepole water treatment plant must remain functional. Therefore, this option was dismissed from further analysis.

**Slip Line the Water Main from Lodgepole/ Wolverton Interconnection to Wuksachi Tanks**
Water modeling was used to evaluate the existing water supply and distribution system and to determine its capabilities for future growth. To accommodate future growth at Wuksachi, a scenario was used to determine the Wuksachi tank fill capacity when compared to existing conditions. The scenario assumed that a 3-inch HDPE water line would be slip-lined into the existing 6-inch water main from the Lodgepole-Wolverton interconnection to the Wuksachi water tanks. The results of the scenario indicated that the Wuksachi tanks would be able to fill at a rate of 30 gpm, which is slightly less than the existing peak day demand from the Wuksachi tanks of approximately 33 gpm. Given the possibility of future expansion at Wuksachi, slip-lining to the Wuksachi tanks with a 3-inch line was eliminated from further analysis because the filling capacity of the Wuksachi tanks decreases to less than the existing and future projected demands.

**Extend Water Line from Upper Sherman Tree to Lower Sherman Tree Area**
During the internal scoping phase of the project, an alternative was considered to extend the water line from the upper Sherman Tree area to the lower Sherman Tree area. Because the test well was deemed a viable groundwater source, the water main on the Wolverton access road would be cut/ capped at the intersection where the lateral line branches off to the upper Sherman Tree area. The water line from the upper Sherman Tree area would be extended to the lower Sherman Tree area. After further investigation, reviews of as-built drawings, and discussions with NPS water treatment operators, it was determined that the existing water line along the Wolverton access road and Generals Highway was a newer water line with no history of failures. In addition, the existing 4-inch water line follows the road corridor and is easy to access and service in the winter if a future failure should occur. Therefore, this alternative was considered but dismissed from further evaluation because it added little to no value for the complexity, cost, and unnecessary resource disturbance.

**Other Water Line Routes from the Giant Forest Tank to the Giant Forest Museum**
Originally, two additional routes were considered for the installation of a new water main from the Giant Forest tank to the Giant Forest Museum. One option included replacing the existing pipe along its current route using the pipe bursting method. The second option considered installing a new water line along a former road corridor that was restored during the ten-year restoration effort in the Giant Forest. On January 12, 2011, a Value Analysis was conducted to look at three specific routes for the water main from the Giant Forest tank to the Giant Forest Museum through the sequoia grove. As a result of the Value Analysis, and after consideration of potential impacts to resources by subject matter experts, both routes were dismissed from further analysis for the following reasons:

- The *Omnibus Public Land Management Act of 2009 (*P.L. 111-11, HR 146*)* designated additional wilderness in Sequoia and Kings Canyon National Parks. Subsequently, approximately 750 linear

feet of the existing water line and approximately 1,100 linear feet of the restored former road corridor are now within designated wilderness. Wilderness legislation and NPS policies allow for an installation within wilderness only if it is necessary to meet the minimum requirements for administration of the area as wilderness. Installing a new water line within wilderness to support frontcountry operations is inconsistent with this requirement.

- During the 1920s and 1930s, extensive development occurred in the Giant Forest area. At that time, Giant Forest was a major attraction that included encampments and villages. In 1980, an environmental impact statement was completed to remove the facilities from the area to reduce development-associated impacts on the giant sequoia grove. From 1997-2005, hundreds of structures were removed and the area was restored. In 2000, the former road corridor was demolished and restored to natural contours; small trees and shrubs are reestablishing in the corridor. The two routes considered but dismissed would traverse cross-country through this restored sequoia grove. The installation of new water lines and the trenching actions necessary for the pipe bursting alternative, are not consistent with the goal of reducing impacts on the giant sequoia grove, and would hamper ongoing restoration efforts.

- Another consideration was the potential for short-term and long-term impacts from the routes on sequoia tree roots, and to meadows and watercourses. All three routes considered for installation of a new water line would be within the giant sequoia grove, and trenching and ground disturbance would be required. However, the two routes dismissed from further consideration were anticipated to cause more disturbance to giant sequoia roots and to new vegetation growth than the route within the Generals Highway road corridor. A combination of pipe bursting, rerouting around significant roots, and trenching was proposed for installing a new water main in the existing pipe route. The method for installing a new water main in the restored former road corridor would involve trenching. Both methods would involve significant ground disturbance and would result in adverse impacts to the giant sequoia groves. Damage to the roots would be unavoidable and could result in the loss of several monarch trees. One of the primary purposes of Sequoia and Kings Canyon National Parks, as stated in the enabling legislation, is to protect these unique trees (16 USC 41, 26 Stat. 478). Therefore it is unacceptable to cause harm to these trees when other options are available. In addition, the existing water line route crosses through a meadow, and both routes would cross a creek. NPS policies strive to prevent the loss or degradation of wetlands and floodplains and to preserve and enhance the natural beneficial values of wetlands and floodplains. While neither alternative would be anticipated to result in unacceptable adverse effects to wetlands and water courses, avoidance of wetlands and water courses, when possible, is most favorable.

For the reasons stated above, the option to install a new pipe main in the existing location and the option to install a new pipe main along the restored former road corridor were dismissed from further consideration because they are not consistent with wilderness legislation; NPS policies; past and present park planning documents; and, would result in unavoidable adverse impacts to resources, including giant sequoia trees, in ecologically sensitive areas.

**Alternative Well Locations in the Giant Forest Area**

A number of locations, within the Giant Forest area, were initially considered for a possible groundwater source. In May 2010, technical expert(s) from the NPS Water Resources Division in Fort Collins conducted a site visit to the Giant Forest area, to review area geology and hydrology for a new well. Potential well locations were severely limited by topography, the desire to limit access to previously disturbed areas, avoidance of restored areas, wilderness area boundaries, and sensitive ecological features

such as wet meadows and sequoia groves. Initially, a site near the Giant Forest Museum was considered a potential site for a test well because it would be near the area where the largest amount of water is used. Upon closer inspection, it was determined that the well site would need to be located off the edge of the overflow parking area. This would place the well some distance from existing electrical service, far from the road corridor, and at a significantly lower elevation than the museum or the Pinewood picnic area. A well at this location would require construction of a new site for a water storage tank above the museum and a booster pump, resulting in an increase in carbon footprint and operations and maintenance. Other sites within the Giant Forest area were considered, but were dismissed from further consideration after a site, selected by technical experts, in the Pinewood picnic area yielded successful results.

## ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is determined by applying the criteria suggested in the NEPA, which guides the Council on Environmental Quality (CEQ). The CEQ provides direction that "the environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in the NEPA's §101."

> [Section 101 states that] it is the continuing responsibility of the Federal Government to:
>
> (1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
>
> (2) Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
>
> (3) Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
>
> (4) Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;
>
> (5) Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
>
> (6) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The identification of the environmentally preferred alternative was based on an analysis that balances factors such as physical impacts on various aspects of the environment, mitigation measures to deal with impacts, and other factors, including the statutory mission of the NPS and the purposes for the project.

Alternative A, No Action, does not fully meet the above six criteria because it retains a water system that does not meet health and safety standards in terms of it not being in compliance with state drinking water standards. Hence, the no action alternative does not assure safe and healthful surroundings (criteria 2), nor does it attain the widest range of beneficial uses of the environment without degradation, risk to health and safety (criteria 3), or achieve a balance between population and resource use that permits NPS and concessioner employees, residents, and visitors, to experience a wide sharing of life's amenities (criteria 5). Retaining a deteriorated water system does not fulfill the responsibilities of trustee of the environment (criteria 1) nor does it meet the criteria for improving renewable resources (criteria 6), because the existing water system is inefficient with regards to energy use and water loss from breaks and leaks in the system. The no action alternative would continue to require repairs and maintenance to the portion of

water line traversing the restored area of the Giant Forest, an ecologically sensitive area, thereby not fully realizing the preservation of important natural aspects of our national heritage (criteria 4).

Alternatives B and C both meet the six criteria as stated in section 101 of NEPA. Actions associated with these alternatives would improve the water system to be in compliance with state drinking water standards, thereby protecting public health, safety, and welfare. These alternatives would preserve the environment for future generations; protect employee safety and welfare; improve operations efficiency and sustainability; and, conserve water resources. Alternative C would provide a slightly greater benefit because a new well would be developed at Pinewood picnic area, which would allow for a greater diversity in the number and types of water sources available to the overall water system, further improving reliability and drinking water, thus improving operational efficiency and sustainability beyond that of alternative B. For this reason, alternative C has been chosen as the environmentally preferred alternative.

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

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

***Impacts that may have both beneficial and adverse aspects and which on balance may be beneficial, but that may still have significant adverse impacts which require analysis in an EIS:*** As fully discussed in the EA/AoE, alternative C (the selected alternative) will have no major adverse impacts on natural or cultural resources that would require further environmental analysis through an environmental impact statement (EIS).

**Geology and Soils:** Most of the project components associated with the selected alternative will occur within park developed areas, within existing utility and/or road corridors, and in areas where soils have been previously disturbed. There will be short-term minor adverse impacts from general construction activities; and, long-term minor adverse effects in localized areas from construction of a chlorine dosing station near the Wuksachi water tanks access road, well development at Pinewood picnic area, replacement of the Lodgepole water treatment plant, and trenching. Long-term beneficial effects will result from relocating the water line from an eroding riverbank, abandoning the water line under the Marble Fork of the Kaweah River, abandoning the existing water line that traverses the Giant Forest area, and from fewer leaks and emergency repairs associated with the existing lines. Project work will occur within previously disturbed corridors and will result in the stabilization of soils in the long-term due to fewer leaks and fewer emergency repairs; therefore, there will be no contribution to adverse cumulative effects. Because this project will result in minor adverse effects, will not contribute to adverse cumulative effects, and will result in long-term beneficial effects to geology and soils; none of the foreseeable impacts associated with this project reach a level of significance that will require analysis in an EIS.

**Vegetation:** Replacement and rehabilitation of water lines, water storage tanks, valves, vaults, FHAs and other water system appurtenances will occur within existing road and utility corridors and in areas where soils have been previously disturbed. However, vegetation has grown back in some of these areas and project work will result in short-term minor adverse effects in localized areas from general construction activities. Mitigation measures to protect giant sequoia roots during the installation of a water line within the Generals Highway roadbed where sequoia roots may be present, and implementation of Best Management Practices to protect riparian vegetation and wetland values during replacement of the two surface water diversion structures, will result in long-term minor adverse effects to vegetation. Long-term beneficial effects to vegetation and the giant sequoia ecosystem will occur from capping and abandoning the existing water line that traverses through the Giant Forest, thereby eliminating any future disturbances from emergency repair work. Additional long-term beneficial effects to vegetation will occur because

breaks in the water lines will be greatly reduced, resulting in fewer emergency repairs, and the quantity of treated water leaking on nearby vegetation will be reduced. The selected alternative will not result in any adverse cumulative effects. Because this project will result in minor adverse effects, will not contribute to adverse cumulative effects, and will result in long-term beneficial effects to vegetation; none of the foreseeable impacts associated with this project reach a level of significance that will require analysis in an EIS.

**Water Resources:** Replacement and rehabilitation of water lines, water storage tanks, valves, vaults, FHAs and other water system appurtenances will occur within existing road and utility corridors and in areas where soils have been previously disturbed. Short-term minor adverse impacts to water resources will occur in localized areas during construction activities due to run-off and erosion. Replacement of the water diversion structures in Silliman and Wolverton creeks will create disturbance in a riparian wetland area and there will be adverse effects downstream associated with sedimentation from instream activities, but impacts will be short-term and Best Management Practices will be implemented to reduce impacts. A new groundwater well will be developed in the Pinewood picnic area; the anticipated low pumping rate and the distance to the headwaters of adjacent drainages will result in minimal to no streamflow reduction. Installing the replacement water line within the Generals Highway will avoid any future impacts to meadows and water courses that the existing water line currently traverses resulting in long-term beneficial effects. Additionally, the selected alternative will adopt a water system design that will improve water conservation efforts and greatly reduce or eliminate water loss associated with breaks and leakage, resulting in long-term beneficial effects. The overall effects of past, ongoing, and future actions in combination with the effects of the selected action will result in short- and long-term minor adverse effects and long-term beneficial cumulative effects on water resources in the project area. Because the project will result in minor adverse effects, short- and long-term minor adverse effects and long-term beneficial cumulative effects, and long-term beneficial effects to water resources; none of the foreseeable impacts associated with this project reach a level of significance that will require analysis in an EIS.

**Historic Resources:** The existing water line that traverses the Giant Forest area will be capped and abandoned in place and the replacement water line will be installed within the roadbed of the National Register-eligible Generals Highway. Similarly, a short segment of current water line within the riverbed of the Marble Fork of the Kaweah River will be abandoned in place and the line relocated to the Generals Highway and placed within the roadbed as it crosses the Marble Fork Bridge. All associated disturbance will be within the existing Generals Highway roadbed, which contains a number of buried utilities, and there will be *no adverse effect* to the Marble Fork Bridge or the Generals Highway.

The "Mission 66" water treatment plant at Lodgepole will be replaced or modified and the water diversion structures in Silliman and Wolverton creeks will be replaced. A Determination of Eligibility was prepared for each structure to evaluate their National Register eligibility. All structures were determined to be ineligible for listing in the National Register; therefore, modification or replacement of these structures will have no effect on historic resources. This project will not contribute to adverse cumulative effects on historic resources because the three structures that will be modified or replaced were determined ineligible in the National Register. Because the project will result in *no adverse effect* to the Marble Fork Bridge and the Generals Highway, and the three structures to be modified or replaced were determined to be ineligible for listing in the National Register; none of the foreseeable impacts associated with this project reach a level of significance that will require analysis in an EIS.

**Public Health and Safety:** The water system will be designed and rehabilitated to comply with state water quality standards, provide high quality drinking water, and provide adequate water delivery for fire suppression capabilities, and provide uninterrupted potable water service for domestic uses, resulting in long-term beneficial effects. Additional beneficial effects will result from developing a new groundwater

source at Pinewood picnic area that will improve water quality at Giant Forest by reducing water age in the system, and providing more diversity in the number and type of water sources available in the overall water system, thereby improving reliability. During construction activities, short-term adverse minor localized impacts will occur from potential risks and hazards associated with construction. Safety protocols and mitigation measures will be adhered to ensure that health and safety are paramount during construction. The selected alternative will result in a long-term and beneficial cumulative effect to public health and safety because the most extensive water system in the parks will be rehabilitated to meet state water quality requirements and fire codes, and will provide an uninterrupted potable water supply for domestic and fire suppression needs. Because the project will result in short-term adverse minor localized effects, long-term beneficial cumulative effects, and long-term beneficial effects to public health and safety; none of the foreseeable impacts associated with this project reach a level of significance that will require analysis in an EIS.

**Visitor Experience and Recreational Opportunities:** Short-term minor to moderate adverse impacts will occur during construction activities and associated area closures, traffic delays, and potential interruption in services. The selected alternative will result in short-term minor to moderate adverse effects to the visitor experience and recreational opportunities primarily during the installation of the water line within the Generals Highway corridor and associated traffic delays; however, in the long-term, the rehabilitation of the water system will greatly reduce or eliminate system shutdowns and interruptions in potable water availability. When considered with past, present, and reasonably foreseeable actions, the cumulative effects will be short-term moderate and adverse, and long-term and beneficial. Long-term beneficial effects will result from ensuring uninterrupted potable water delivery for domestic and fire suppression, and providing high quality drinking water. Because the project will result in short-term minor to moderate adverse effects; short-term moderate and adverse, and long-term and beneficial cumulative effects; and, long-term beneficial effects to visitor experience and recreational opportunities; none of the foreseeable impacts associated with this project reach a level of significance that will require analysis in an EIS.

**Park and Concessioner Operations and Employee Safety:** Construction activities will result in short-term minor adverse impacts to park and concessioner operations, to NPS and concessioner employees and their families during construction activities on the Generals Highway and in Wuksachi, and if water shutdowns are necessary during project work. When added to past, present, and reasonably foreseeable future activities the selected alternative will result in short-term adverse minor cumulative effects from construction activities and long-term and beneficial cumulative effects to park and concessioner operations and employee safety. Rehabilitation of the water system will improve drinking water quality, provide uninterrupted potable water delivery to NPS and concessioner operated facilities and residences, provide adequate water delivery for fire suppression, and improve working conditions for employees, resulting in long-term beneficial effects. In addition, the construction of the well at Pinewood picnic area will improve water quality at Giant Forest by further reducing water age in the system, and will provide more diversity and flexibility in the number and type of water sources available, thereby improving reliability. Because the project will result in short-term minor adverse effects; short-term minor and adverse, and long-term beneficial cumulative effects; and, long-term beneficial effects to park and concessioner operations and employee safety; none of the foreseeable impacts associated with this project reach a level of significance that will require analysis in an EIS

***The degree to which public health and safety are affected:*** During construction activities, short-term adverse minor localized impacts will occur from potential risks and hazards associated with construction. Safety protocols and mitigation measures will be adhered to ensure that health and safety are paramount during construction. The selected alternative will result in long-term beneficial effects to public health

and safety by providing high quality drinking water, meeting state water quality standards, and providing an uninterrupted potable water supply for fire suppression and domestic needs.

***Any unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, wilderness, or ecologically critical areas:*** The selected alternative will replace two water intake structures and associated concrete dams in Silliman Creek and Wolverton Creek. Activities associated with replacing the structures will result in less than 0.1 acre deviation in the structure's configuration or fill footprint. Therefore, exemption 4.2.A.1.g, *Maintenance, Repair, or Renovation of Currently Serviceable Facilities or Structures . . .*, (*Director's Order 77-1: Wetlands Protection*) applies to these actions as long as Best Management Practices are implemented. The NPS will implement Best Management Practices to protect wetlands and impacts are anticipated to be less than minor.

Floodplain values in Silliman and Wolverton creeks have been previously altered by the existing dam structures below each water intake. Project activities will be designed so not to compromise floodplain values, stream morphology, or the natural river values. Best Management Practices will be implemented and there will be no adverse effects to floodplain values.

The Marble Fork of the Kaweah River has been found eligible and suitable for Wild and Scenic Rivers status. There are two surface water diversions located in Silliman and Wolverton creeks; these creeks are tributaries of the Marble Fork of the Kaweah River. There is also an existing water line buried under the Marble Fork of the Kaweah River. Project activities associated with replacing the water diversion structures and capping and abandoning the existing water line that is buried under the Marble Fork of the Kaweah River will be temporary and localized, and will not threaten the outstanding remarkable values and resources associated with the eligibility and suitability of the Marble Fork of the Kaweah River wild and scenic river designation.

The project activities described in the selected alternative will occur outside of proposed and designated wilderness and will have no impact on the wilderness resource.

There will be no effect from the project on Indian Trust Resources or Prime and Unique Farmland because there are none of these resources in the project area. There will be no effect to health or environmental effects on minorities or low-income populations or communities. No areas within the project sites are designated as critical habitat or ecologically critical areas. The selected alternative will not affect the parks' status as an international biosphere reserve.

A discussion of unique historic and cultural resources can be found under the following heading "*The degree to which the action may adversely affect historic properties in or eligible for listing in the National Register of Historic Places, or other significant scientific, archeological, or cultural resources.*"

***The degree to which effects on the quality of the human environment are highly uncertain or involve unique or unknown risks:*** There were no highly controversial effects identified during preparation of the environmental assessment, agency consultation, or the public review period. Throughout the environmental process, the proposal to rehabilitate the water distribution system, was not highly controversial nor are the effects expected to generate future controversy

***The degree to which the potential impacts are highly uncertain or involve unique or unknown risks:*** The analysis is based on the most up-to-date available information. There were no highly uncertain, unique, or unknown risks identified during the preparation of the EA/AoE, agency consultation, or the public review period. Generally, the potential impacts are well defined and analyzed in the EA/AoE.

Should unknown archeological resources be encountered during project implementation, work will be halted in the discovery area, the site secured, and the parks' archeologist notified. The parks' archeologist or a qualified representative will examine the area as soon as possible and follow the requirements of the NHPA, and any other applicable cultural resource laws, as needed. Work could resume only after an appropriate mitigation strategy is developed in consultation with the California SHPO and after archeological clearances are obtained.

***The 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:*** The selected alternative (alternative C-preferred alternative) is not expected to set a precedent for future actions with significant effects, nor does it represent a decision in principle about a future consideration.

***Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts:*** The potential for cumulative effects for all alternatives was thoroughly addressed in the Environmental Consequences section of the EA/AoE. Implementation of the selected alternative will contribute short-term minor to moderate adverse effects on water resources, visitor experience and recreational opportunities, and park and concessioner operations and employee safety, with overall long-term beneficial effects. The project will not result in any significant cumulative impacts.

***The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or cause loss or destruction of significant scientific, cultural, or historical resources:*** There are a number of historic resources in the project area. The existing water line that traverses the Giant Forest area will be capped and abandoned in place and the replacement water line will be installed within the roadbed of the National Register-eligible Generals Highway. Similarly, a short segment of current line within the riverbed of the Marble Fork of the Kaweah River (Lodgepole area) will be abandoned in place and the line will be re-located to the Generals Highway and placed within the roadbed as it crosses the Marble Fork Bridge. All associated disturbance will be within the existing Generals Highway roadbed, which contains a number of buried utilities, and there will be *no adverse effect* to the Marble Fork Bridge or the Generals Highway.

Other project activities include the replacement and/or rehabilitation of water lines, valves, and associated water system appurtenances. Sections of the water lines and associated appurtenances range between 30 and 70 years in age. Various work elements would include excavation; demolition and disposal of old piping and valves; installation of new piping, valves, and appurtenances; backfilling and compaction; and re-vegetation of areas disturbed by construction activities. The water line through the Giant Forest was constructed in the 1930s and supported numerous structures that have since been removed in an extensive restoration project that occurred from 1997 to 2005; this water line would be capped and abandoned in place. Thus, there would be *no effect* to these resources.

The Lodgepole water treatment plant will be replaced to better accommodate contemporary water treatment technology. The water treatment plant was constructed in 1965 during the NPS "Mission 66" era which spanned the years from 1956-1966. In addition, two water diversion structures will be replaced, as funding becomes available. The water diversion structure in Silliman Creek, near Lodgepole, was constructed in 1933 and associated appurtenances completed in 1934. The water diversion in Wolverton Creek was constructed in 1958. Both structures have been damaged and modified by past flood events. The NPS prepared a Determination of Eligibility for the two dam structures and the "Mission 66" water

treatment plant at Lodgepole to determine whether any of the structures are eligible for listing in the National Register. The NPS determined that none of the structures are eligible for listing in the National Register of Historic Places, and the California State Historic Preservation Officer concurred with this determination in a February 6, 2012 letter to the NPS.

***The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973:*** On April 7, 2011, the NPS accessed the U.S. Fish and Wildlife Service's website to obtain an official species list for endangered and threatened species that may be in the project area and could be affected by project activities. NPS biologists reviewed the U.S. Fish and Wildlife Service's list and lists of state-listed species and species of concern, to determine which species could potentially be affected. NPS biologists identified 32 wildlife species with special status that have been known to occur in or travel through the project vicinity. After further review of park data and using professional judgment, the NPS determined that there will be "no effect" to special status species, including the California condor, Sierra Nevada yellow-legged frog, wolverine, and fisher. Special status wildlife species was dismissed as an impact topic because they either do not occur within the project area, or project implementation will not affect these species.

There are no known federally threatened or endangered plant species in the parks'. There is only one state-listed rare plant species, Tompkins sedge (*Carex tompkinsii*), that is known to occur in the parks'. This plant will not be affected by the selected alternative. No known special status plant species will be affected by implementation of the selected alternative.

***Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment:*** The selected alternative (alternative C- preferred alternative) will not violate any federal, state, or local laws or environmental protection laws. All required permits will be acquired prior to project activities commencing.

## PUBLIC ENGAGEMENT AND AGENCY COORDINATION

### Public Scoping

A press release describing the project and initiating the 30-day public scoping period was issued on September 2, 2010. The press release was emailed to 429 addressees on the parks' mailing list, and a letter was sent to an additional 200 media outlets, interest groups, public officials, agencies, and individuals in the central California area. Letters were also sent to 33 area American Indian Tribes or tribal representatives. Public scoping notices were published in two newspapers and internet sites, including the Visalia Times-Delta (newspaper and website) on September 3; and, the Kaweah Commonwealth (newspaper and website) on September 10. Interagency scoping was also conducted and included agencies such as the California Department of Public Health and the California State Historic Preservation Office.

During the 30-day public scoping period, which ended on October 2, 2010, the parks received three correspondences; one additional correspondence was received after the public scoping period ended. One correspondence was from an individual who was in support of the project. The second correspondence requested more information and details on the project proposal. The NPS responded with some additional information, however, specific project details were not known at the time of scoping. A third correspondence was from a business interested in submitting an engineering proposal. The fourth correspondence, received after the public scoping period ended, requested to be on the parks' mailing list and receive copies of documents and notification of opportunities for public comment. No additional comments were received.

## Public Review of the EA/AoE

The EA/AoE was made available for public review and comment during a 30-day period ending May 25, 2011. A press release was sent to media outlets and posted to the parks' internet website. Letters or a printed or CD version of the EA/AoE, as requested, were distributed to individuals, park neighbors, organizations, area tribes, local news media, area libraries, agencies, and interested parties on the parks' mailing list. Interested parties were also notified by email that the document was available for review. An electronic version of the EA/AoE was broadly available to the public through a posting on the NPS Planning, Environment and Public Comment (PEPC) website and also linked to the parks' public website. An article on the upgrades to the water distribution system was published in The Fresno Bee newspaper on June 5, 2011

Three comments were received during the 30-day public review period. The California State Clearinghouse sent a letter acknowledging that the NPS has complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the CEQA and that no comments were submitted through their review process. Caltrans District 6 identified that they had no comment on the project. The Native American Heritage Commission (NAHC) sent a letter stating that no Native American cultural resources were identified in their NAHC Sacred Lands File search. Enclosed with the NAHC letter, was a list of Native American contacts. The parks' mailing list was updated to reflect any differences between the lists, and project notification was sent to tribes.

## Agency Consultation, Coordination, and Permitting

On December 8, 2010 and April 7, 2011, the NPS accessed the USFWS website to obtain an official species list for endangered and threatened species that may be in the project area and could be affected by project activities. NPS biologists reviewed the USFWS list and lists of state-listed species and species of concern, to determine which species could potentially be affected by implementation of the proposed project. The NPS determined that there would be *no effect* on threatened or endangered species from implementation of the selected alternative. On April 22, 2011, the NPS sent a letter to USFWS for concurrence that the project would have no effect on threatened or endangered species. No response was received.

In January 2011, the NPS sent a letter to the California State Historic Preservation Office (SHPO) to seek preliminary comments on the project proposal. No preliminary comments were received. The NPS sent a letter on April 22, 2011 with the parks' determination of *no adverse effect* to the Marble Fork Bridge and the Generals Highway. The NPS prepared a Determination of Eligibility for the two dam diversion structures and the "Mission 66" water treatment plant at Lodgepole and submitted the documentation to the SHPO for review on October 11, 2011. A letter dated February 6, 2012 from the SHPO concurred with the NPS determination that the three structures are ineligible for listing in the National Register of Historic Places. On April 4, 2012, the NPS received an advance notification of the SHPO letter concurring with the NPS determinations that (1) historic properties within the area of potential effect were properly identified, and (2) the overall undertaking would result in *no adverse effect.*

Permitting Requirements

- California Department of Public Health, Drinking Water Program- Domestic Water Supply Permit and amendments for a new water supply and change in the method of water treatment.
- U.S. Army Corps of Engineers- Section 404 Nationwide Permit for work within waterways.
- California State Water Resources Board- Section 401 water quality certification for working in waterways.

## CONCLUSION

Based on the conservation planning and environmental impact analysis documented in the EA/AoE, with due consideration of the nature of the public comments and consultations with other agencies, and given the capability of the mitigation measures to avoid, reduce, or eliminate impacts, the NPS has determined that the selected actions do not constitute a federal action that normally requires preparation of an environmental impact statement (EIS). 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. The selected actions will not have a significant effect on the quality of the human environment or the parks' cultural resources, or natural resources, and there will be no effect to threatened or endangered species.

There are no unmitigated adverse impacts on public safety, 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, 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 EIS will not be prepared and the selected actions may be implemented as soon as practicable.

Recommended:

Karen F. Taylor-Goodrich
Superintendent, Sequoia and Kings Canyon National Parks

4/5/2012
Date

Approved:

for Christine S. Lehnertz
Regional Director, Pacific West Region

4/6/12
Date