

Devils Postpile

National Monument

National Park Service
U.S. Department of the Interior



Replace Wastewater Treatment System Environmental Assessment

June 2021



Devils Postpile National Monument
P.O. Box 3999
Mammoth Lakes CA 95346

Devils Postpile National Monument ♦ National Park Service ♦ U.S. Department of the Interior

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How to Comment on this Environmental Assessment

This EA is being made available to the public, federal, state and local agencies, and organizations through press releases distributed to a wide variety of news media, direct mailed, and announced on park websites.

Copies of the document may be obtained from <http://parkplanning.nps.gov/depo> (PEPC) or Devils Postpile National Monument:

Internet: <http://parkplanning.nps.gov/depo> (PEPC Project Number 94932)

Mail: P.O. Box 3999, Mammoth Lakes CA 95346

Note to Reviewers: Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment –including your personal identifying information– may be made publicly available at any time. Although you can ask the NPS in your comment to withhold your personal identifying information from public review, the NPS cannot guarantee that it will be able to do so.

Responses to substantive comments on the EA will be addressed in the proposed Finding of No Significant Impact (FONSI) or will be used to prepare an Environmental Impact Statement (EIS) (if warranted).

Note: For more information about specific agency and staff consultation, see Chapter 4: *Persons and Agencies Consulted.*

Chapter 1: Purpose of and Need for Action

This chapter describes the purpose and need, introduces the project area, and provides the planning background for the project. It also includes impact topics, which are the potentially affected resources. Those resources that have been dismissed from further analysis, because there are no or very small impacts, are also identified.

A. Introduction

Devils Postpile National Monument (“monument” or “park”) was established on July 6, 1911 by Presidential Proclamation 1166. Devils Postpile National Monument is located within the upper montane and subalpine zones of the western slope of the Sierra Nevada Mountains in eastern Madera County, California. Its rectangular boundary is oriented north-south. The Town of Mammoth Lakes and Mammoth Mountain Ski Area are located less than six miles to the east (Figure 1). The purpose of the monument is to preserve and protect the glacially exposed columns of the Devils Postpile, the scenic Rainbow Falls, and the wilderness landscape of the Upper Middle Fork of the San Joaquin River (San Joaquin River) in the Sierra Nevada for scientific value, public interest, and inspiration. The park is comprised of approximately 800 acres of geologic formations, riparian and wetland areas, and mixed conifer forests, with an elevational gradient ranging from 7,200 feet at the southern monument boundary to nearly 8,400 feet at the summit of Granite Dome. Approximately 85 percent of the monument (673 acres) is federally designated wilderness. Outside the wilderness boundary, the monument contains a small developed area, including a day use Visitor Contact/Ranger Station (listed in the National Register of Historic Places in 2015), parking lots, employee housing, maintenance facilities, storage, and a 20-site campground.

Most visitation is in the northeastern corner of the monument near the campground, parking lot, and Visitor Contact/Ranger Station, and within the non-Wilderness portion along trails leading to the Postpile, although there is a high degree of visitation to Rainbow Falls in the south in designated Wilderness (Kuhn and Whitaker 2014:28).

B. Purpose and Need

The purpose of the proposed project is to test percolation rates for and to construct a new septic system disposal (leach) field, septic tanks, and associated piping, to serve the visitor and administrative areas at Devils Postpile National Monument (Figure 1). Future implementation would also include adding vault toilets to assist with peak season use and replacing the comfort stations in the campground and day use area with improved accessible facilities. Replacement of these comfort stations is important because the buildings are deteriorating and are at the end of their useful life, and because associated plumbing frequently clogs, resulting in a high level of maintenance during the visitor use season. Continued provision of restrooms, including running water, is also intended to serve monument employees, work groups, and volunteers. Without replacement of the septic tanks and leachfield, the monument would be reliant on portable toilets, a solution that would be unsightly, costly, and temporary.

Failure of the current inadequate wastewater treatment system could result in potential contamination of the Upper Middle Fork San Joaquin River. If raw sewage containing bacteriological contamination reached the river, it would be a serious Clean Water Act violation that could result in expensive penalties. These would be in addition to tens of thousands of dollars in daily fines that could result from continued use of a failed facility. Contamination could also adversely affect water quality and the Soda Springs Meadow and/or temporarily jeopardize the status of the river as an eligible Wild and Scenic River.

The monument is a popular destination for day use and overnight visitors, who enjoy sightseeing, hiking, camping, and access to other outdoor recreational opportunities. Replacement of the failing leachfield would ensure that the monument continues to provide for the basic sanitation needs of visitors with clean, functioning comfort stations, which are essential to a high-quality visitor experience. Replacement would also ensure that the monument continues to attract, accommodate, and retain required occupancy and seasonal staff by providing housing that includes flush toilets, bathing, and laundry facilities. Replacing the septic system would reduce potential pollution and other impacts to area natural resources from the failing leachfield.

C. Background

Rainbow Falls Leachfield: Since the 1980s, the U.S. Forest Service (USFS) Inyo National Forest and NPS have relied on the sewer line that follows Reds Meadow Road to the leachfield and septic tanks at Rainbow Falls Trailhead, which is located in the Inyo National Forest.

In 2015, the sewage lift station¹ pumps, pipes, hardware and control panel for the wastewater system within the monument failed and were replaced. This initiated planning for replacement of the 4-inch force main², due to its age, pressure and condition. The force main was needed due to the distance from the point of entry of the wastewater and the leachfield near Rainbow Falls, approximately 1.5 miles. The need for this replacement would be avoided with the gravity-fed system the park is proposing to construct.

In 2016, the USFS and NPS found that the Rainbow Falls leachfield was failing and were issued a waiver from Madera County for continued operations. At this time, the Inyo National Forest and NPS began to investigate options for replacement of the failing leachfield near Rainbow Falls. By 2018, the Inyo National Forest had decided to remove flush toilet facilities from all its campgrounds and day use areas in favor of vault toilets, which do not require leachfields and require less maintenance. The Inyo National Forest discontinued the use of flush toilets throughout the Reds Meadow Valley in 2019.

¹ A wastewater lift station is a pump station that moves wastewater from a lower elevation to a higher elevation. Using a lift station in a sewage collection system saves substantial excavation costs to dig trenches for sewer pipes. Lift stations are also used where trenching for gravity flow will not work (which is the case at the park).

² A force main is a sewer pipe that uses pumps or compressors instead of gravity to push wastewater from low to high elevation across landscapes where deep excavation is not possible.

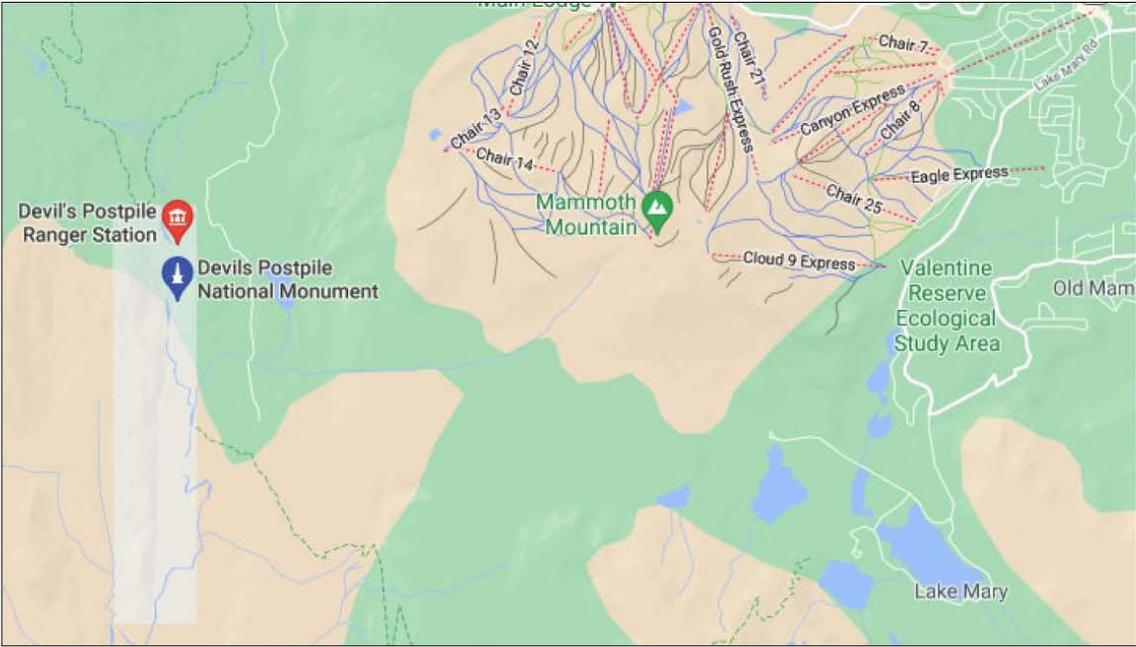
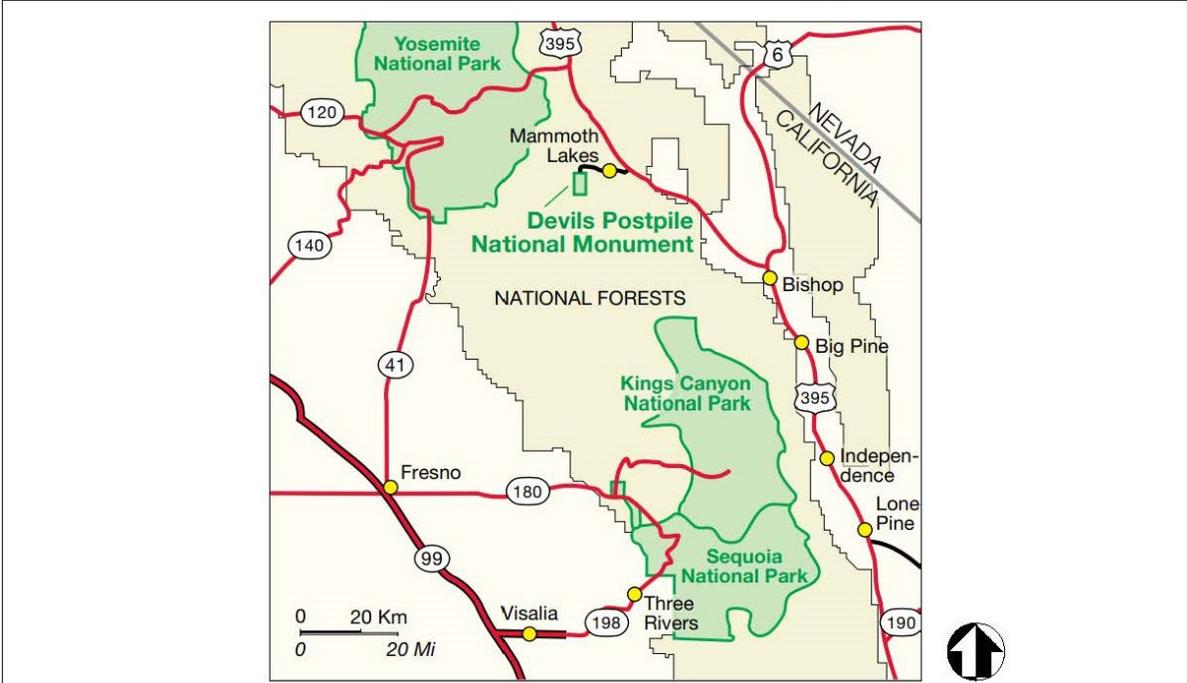


FIGURE 1 - DEVILS POSTPILE REGIONAL MAPS

Devils Postpile National Monument

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Under a verbal consensual agreement, the USFS has continued to allow the NPS use of the Rainbow Falls leachfield and since 2018 the NPS has been responsible for replacing and maintaining the leachfield and septic tanks. Due to the condition of the leachfield and high cost for needed repairs, the long distance from the monument and the difficulty in pumping wastewater from the monument to the force main (which would need replacement), the NPS determined that an alternate location for both the septic tanks and leachfield would be preferable. The agencies agreed informally that the NPS could continue to use the Rainbow Falls septic system until a proposed location was determined and the percolation tests for a new leachfield and its installation were completed.

The NPS determined that septic tanks could be installed in the monument and has been exploring potential locations for a leachfield. At first, the nearby overnight hiker parking area on USFS land was identified as a potential location and under an informal agreement with the USFS, the NPS began planning for percolation testing. In summer 2020, NPS was pursuing an agreement to conduct percolation tests at the overnight hiker parking area, but without a formal agreement the NPS could not move forward with the percolation testing contract. Therefore, the NPS decided to pursue alternative park-located areas for the replacement leachfield. That, and the fact that a categorical exclusion determination did not specifically apply, led to the development of this environmental assessment (EA).

Devils Postpile Visitor Use: From Memorial Day through Labor Day, a mandatory shuttle bus brings up to 65 visitors to the monument every 20 minutes during peak visitation periods (10:00 a.m. – 3:00 p.m.). Most people take advantage of the restrooms and drinking fountain/water bottle filling station before embarking on the four-mile round-trip hike to the Postpile/Rainbow Falls. During other times of year and when the shuttle is not running, day use visitors can drive into the park, where available parking determines access. When the campground is open (it has been closed since 2016), or outside of shuttle hours, visitors can also drive into the park in personal vehicles.

Devils Postpile Administrative Use Area: The monument contains an administration area with five small rustic wood-frame cabins, three tent cabins, one maintenance building, an employee facility, a cache for emergency, and search and rescue supplies, and three other storage units.

Devils Postpile Campground and Day Use Area: Visitor facilities in the area include twenty campsites, the small historic Visitor Contact/Ranger Station, two comfort stations, two accessible restrooms, a two-stall vault toilet, a small picnic area, approximately five miles of hiking trails, parking for about sixty-five cars, and a small outdoor amphitheater.

Visitation

An average of 1,500 visitors arrive daily (with a peak of 2,500-3,000 on busy weekends) to visit Rainbow Falls and Devils Postpile, the park's two primary destinations. From mid-June through Labor Day arriving visitors park at the Mammoth Mountain Adventure Center and take a mandatory shuttle bus eight miles to the park, where they disembark and hike trails to visit these primary attractions.

Relationship to the General Management Plan Environmental Assessment/Finding of No Significant Impact (2015)

The general management plan (GMP) calls for the continued use of the park's administrative and visitor use facilities. "Visitor experiences will continue to include a range of low-impact

recreational opportunities that have traditionally been available within the monument such as camping, hiking, fishing, sightseeing and wildlife viewing.”

The area where the proposed leachfields would go in Alternatives 2-4 is zoned “frontcountry.” Frontcountry is defined in the GMP as an area where “Natural resources and processes could be modified to accommodate visitor and administrative needs such as facilities and infrastructure, as well as safety concerns.

Support services and administrative facilities, including limited, small scale telecommunications facilities, are allowed in this zone. Such facilities would be sited sensitively to protect open space, resources, and to harmonize with the natural environment.”

Recent Campground Closures

The campground has been closed since 2016 for several reasons, including to allow for the projected water and wastewater improvements in the adjacent day use area, to reposition staff resources to ensure employee and visitor safety during an extensive trail rehabilitation project to the base of Rainbow Falls, and because deep snows in two years prevented its timely opening.

D. Issues and Impact Topics from NPS, Tribal, and Public Scoping

Issues and impact topics are the resources of concern that may be affected by the range of alternatives considered in this EA. Impact topics are used to analyze changes from current conditions in the *Affected Environment/Environmental Consequences* chapter.

NPS NEPA guidance in Director’s Order 12 and the accompanying handbook directs that issues should be retained for consideration and analysis if they are directly related to the proposal; if analysis of environmental impacts is important to make a choice between the alternatives; if the environmental impacts were raised as a concern by the public and/or other agencies; or if there are potentially significant impacts associated with the issue (NPS 2015).

The following resource topics are considered in this Environmental Assessment (EA): soils, water resources (hydrology, water quality, water quantity (use), and floodplains), vegetation, wildlife, special status wildlife, cultural resources (archeology and historic structures), and visitor experience.

E. Issues and Impact Topics Considered but Dismissed

Issues and impact topics are dismissed from further evaluation if:

- they do not exist in the analysis area, or
- they would not be affected by the proposal, or
- the likelihood of impacts are not reasonably expected, or
- through the application of mitigation measures, there would be no measurable effects from the proposal.

The following topics were eliminated from detailed study because there would be minimal or no impacts: air quality, water resources (wetlands), special status plants, climate change, cultural landscapes, ethnographic resources, museum collections, socioeconomics, wild and scenic rivers, Indian trust resources, and environmental justice.

F. Decision to be Made

This EA was prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations, 40 CFR Parts 1500-1508 (revised 2020) and NPS Director's Order (DO) 12, and the NPS NEPA Handbook (NPS 2015).

NEPA requires that federal agencies conduct an analysis of impacts for “major Federal actions significantly affecting the quality of the human environment,” along with other reasonable alternatives to the proposed action. Agencies are required to make informed decisions based on analysis conducted under NEPA and input obtained from the public and interested stakeholders. Upon closure of the public comment period for this EA, the NPS will review and analyze all comments received and, if needed, will modify the EA to reflect modifications resulting from public comments. Substantive comments made on the EA will be summarized and discussed in the Finding of No Significant Impact (FONSI), the decision document produced following public review of the EA.

This EA evaluates impacts from the proposed project on park resources and will be used by the NPS Interior Regions 8, 9, 10, and 12 (formerly the Pacific West Region) Regional Director to make a decision, based on a recommendation from the Superintendent of Devils Postpile National Monument, about whether and how to replace the wastewater treatment system and/or comfort stations. This decision will be documented in the proposed FONSI for this EA. Though it is not anticipated to, if the EA reveals significant impacts on park resources from the project, an Environmental Impact Statement and Record of Decision would be prepared.

G. Civic Engagement

Civic engagement began March 17, 2021 and concluded April 1, 2021. No comments were received on the proposed project via the NPS Planning, Environment and Public Comment (PEPC) site.

H. Federal, State, Local Permits and Consultation Requirements

The proposed action to replace the septic system require consultation with the California State Historic Preservation Office and the U.S. Fish and Wildlife Service, a permit from Madera County to operate a wastewater treatment system, and it would require a Non-point Discharge Elimination System (NPDES) Permit (a standard construction permit – the type of permit would also be dependent on the extent of the area affected by the proposed action).

Chapter 2: Alternatives, Including the Proposed Action

NEPA requires federal agencies to explore a range of reasonable alternatives to address the purpose, need, and objectives of the proposed action. This chapter describes three alternatives. The no action/continue current management alternative (1) is intended to describe the existing condition of the park related to the wastewater treatment system. The proposed action/preferred alternative is Alternative 2, which would relocate the day use comfort station. Alternative 3 would continue the existing location for the day use comfort station. All alternatives would replace the failing wastewater treatment system.

The alternatives were developed by the NPS based on collaborative interdisciplinary analysis derived from the expertise of planning team members and other experts consulted. The park also conducted civic engagement with park visitors, nearby federal, state, and local government agencies, applicable Indian tribes, interested organizations, and other public individuals.

A. Description of the Alternatives

1. Alternative 1: No Action

The current wastewater treatment system was installed in the 1970s and has been used by the NPS for the past 50 years but is no longer functioning properly. Although there is no formal agreement between the NPS and USFS, the agencies have shared maintenance operations and problem-solving strategies from the beginning. Since 2016, Madera County has allowed the NPS to continue operation of the leachfield on a waiver, without issuing a notice of violation. It is unknown how long Madera County will continue to extend the waiver, especially if inaction by the NPS continues. Until such time as failure occurs or the waiver is withdrawn, the monument would continue to operate the current wastewater treatment system. During this interim period, the campground would likely continue to be closed to reduce the amount of wastewater produced.

The existing wastewater system would continue to use a pump to move effluent through a 4-inch force main to the leachfield located near Rainbow Falls on USFS land in the Inyo National Forest. As described in the sidebar, beginning in the 1980s, the USFS and NPS have been dependent on the sewer line that follows the Reds Meadow Road to the leachfield and septic tanks at the Rainbow Falls Trailhead since the 1980's. In 2018, however, the USFS discontinued the use of flush toilets at all recreation facilities throughout the Reds Meadow Valley when the current system at Rainbow Falls was determined to be failing and in need of replacement rather than repair.

Under this alternative, portable chemical toilets serviced on a regular basis would be used to partially address transient public wastewater needs if the septic system failed. Portable toilets, however, would not be suitable for overnight accommodations (e.g. shower and sink wastewater, etc.) for either onsite administrative staff or the public. If employee facilities continued to operate without a wastewater treatment system, the wastewater would have to be

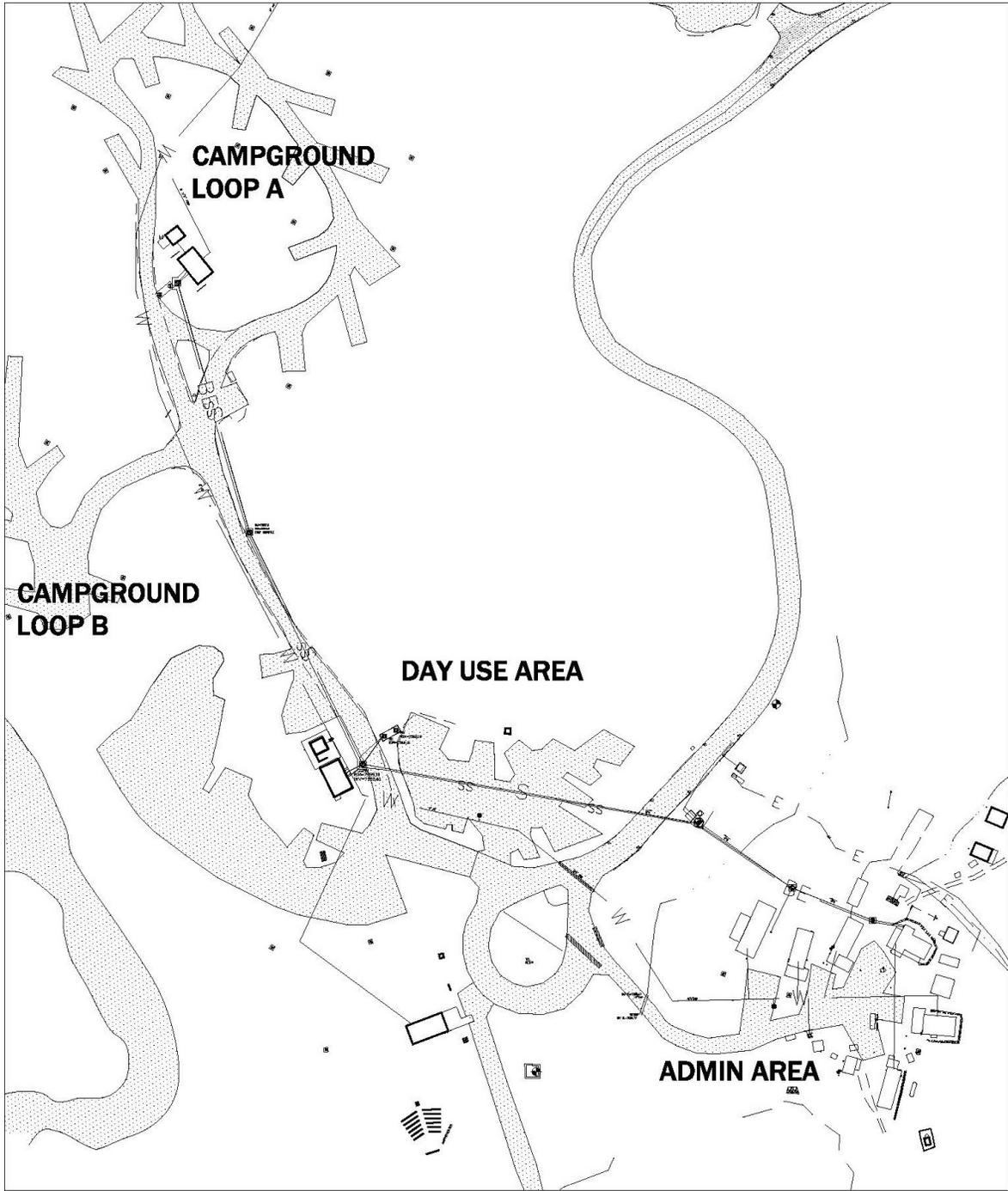


FIGURE 2 - DEVILS POSTPILE - ALTERNATIVE 1 - NO ACTION

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collected and hauled to a sanitary receiving station qualified to accept human waste. The closest such facility is in the Town of Mammoth Lakes.

Alternatively, the park could discontinue use of visitor and employee facilities dependent on the wastewater treatment system, including the existing comfort stations, water fountains, and employee and administrative facilities and supply portable toilets, until a future solution was identified.

2. Alternative 2: Relocate Failed Leachfield and Install New Septic Tanks

Under this alternative, operation of the failing wastewater treatment system would cease as soon as a new system could be constructed and relocated to NPS-owned lands.

The new wastewater treatment system would be constructed within the monument and would consist of new primary and secondary leachfields, new septic tanks near each primary facility, and connections to the existing sewer force main, water, and electrical power (Figure 3).

In addition to serving visitor needs for two comfort stations, the new wastewater treatment system would serve a new employee commons facility constructed in 2012 that includes flush toilets, showers, laundry, and cooking facilities for the cabins and tent cabins used by park staff that lack either a kitchen or a bathroom or both facilities. Because of the limited availability of affordable housing nearby, this facility, along with existing park housing, has increased opportunities to successfully recruit and retain seasonal and permanent staff.

Preparatory Work

Soil Percolation Testing: Prior to determining a final location for the leachfield, percolation tests would be conducted. Percolation testing is necessary to evaluate soil properties and characteristics for determining site acceptability, and to inform the design and size requirements for the future leachfield and septic system. Percolation tests are required prior to obtaining State of California and Madera County construction permits.

A percolation test would be performed at each of two locations per Madera County Environmental Health Division standards, described in the most recent *Local Area Management Plan, Onsite Wastewater Treatment Systems* (2012). Each test pit would consist of excavating a trench approximately 10-feet long by 2-feet wide and 10-feet deep using a mechanized backhoe with a 24-inch bucket. One would be excavated within each of the proposed primary and secondary leachfields.

For the percolation test, six 6-8-inch diameter cylindrical holes would be bored to a depth of no more than 6 feet using a backhoe with an auger attachment. These holes would be filled with clear water until the surrounding soil reaches saturation and then would be held at saturation for 24 hours to provide opportunity for soil swell to occur. After soil swell is reached, the bore holes would once again be filled with clear water and monitored for infiltration for at least four hours and potentially over a full night depending on soil characteristics discovered during testing. There would be a minimum of three percolation holes drilled in each of the two leachfields.

Deep borings, backhoe excavations, and percolation tests are used to demonstrate that the subsurface disposal area is in an area of uniform soil, and that no conditions exist which could adversely affect the performance of the leachfield system or result in groundwater degradation. Multiple holes are required to ensure test results are valid since subsoil strata can vary widely over short distances. Madera County requires a minimum of three test holes for each leachfield, drilled to different depths. The test, including associated equipment staging and its excavation pile would be spread over approximately 4,000 square feet. Percolation bore holes and test pits will be monitored by a qualified archeologist during and following excavation (see *Impact Avoidance, Minimization and Mitigation Measures* in the Environmental Consequences section). All excavated material would be backfilled with native soil and clean fill upon test completion. Any holes left unattended overnight would be covered to prevent human and wildlife entrance.

Utility Testing: Installation of the new sewer lines connecting the septic tanks to the new leachfield also requires excavation to determine the exact location of the existing sewer force main, and any buried electrical and communications utilities.

Excavation for utility testing would occur at each of the three locations of proposed septic tank construction, with additional testing at the proposed holding tank near the sewage lift station. Each utility location area would include surface area needed for the excavation, spoil pile, and backhoe staging.

The two day use septic tank locations are proposed 200 feet north of the Visitor Contact/Ranger Station and about 30 feet east of the day use comfort station. The campground septic tank locations would be southeast of the campground comfort station and close to the access road. The administrative utility pothole location would be approximately 30 feet northwest of the Superintendent's Office centered over a manhole that is no longer needed. Excavation at each site would consist of one hole, 10-feet in diameter and six-feet deep. Each hole would be backfilled once the utility location is found.

Wastewater Treatment System Replacement

Leachfield: To serve the existing campground and day use area, a new wastewater disposal (leach) field would be constructed just north of (uphill from) the administration area (Figure 4). The new wastewater system has preliminarily been designed for a capacity of 4,500 gallons per day based on testing in the Reds Meadow Valley in 2015. The size and shape could vary depending on the actual results of percolation testing. This location was selected for its suitable terrain, accessibility from the road, avoidance of sensitive resources, and for its potentially acceptable results from percolation tests and ability to meet the regulatory requirements for a suitable disposal field in terms of area and suitable location.

Madera County requires that a reserve leachfield, of equal area to the primary leachfield, must be identified (secondary leachfield) and dedicated for future installation of a leachfield to replace the primary leachfield when it fails. In the case of the park, a secondary leachfield with the same characteristics would be constructed adjacent to the primary leachfield. Installing the secondary leachfield at the same time would also allow the park to alternate leachfields each year or every two years. One leachfield would remain active, while the other is rested. One of the leachfields must always be offline.

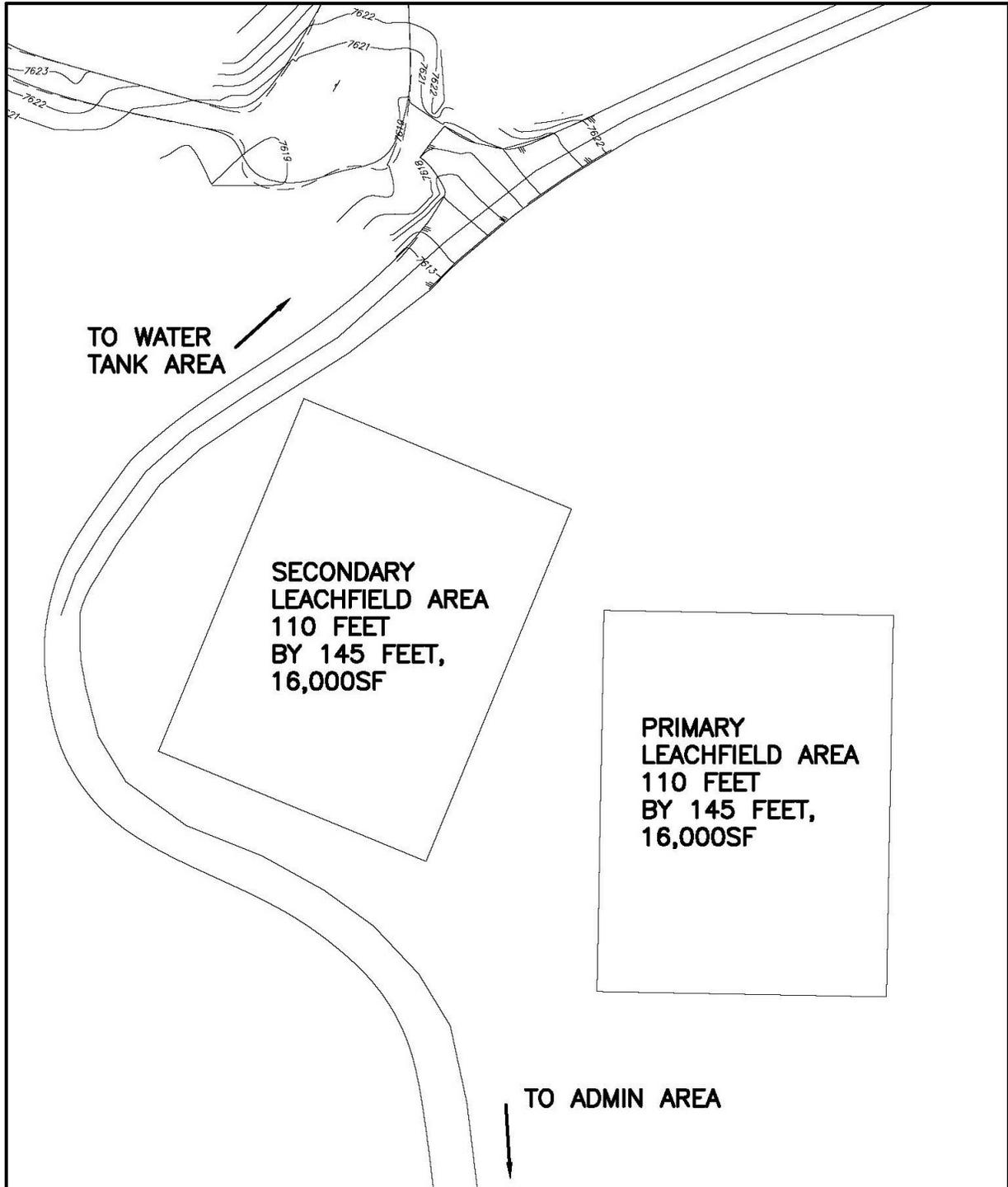
Approximately 6,000 square feet within an area of approximately 18,000 square feet would be used for each leachfield. The center of this area is located approximately 385 feet north of the administrative area. The leachfields would be comprised of approximately 20 rows of gravelless disposal laterals, each approximately 100 feet long (2,000 linear feet). These laterals would have a maximum spacing of approximately 8-feet between the centerline of one leg and the adjacent centerline. Each lateral would be a trench excavated to a depth of approximately 2-feet and would include infiltrator chambers, and 4-inch PVC capped pipes serving as observation and piezometer monitoring portals. The comprehensive leachfield would be suitable for processing up to 4,500 gallons of wastewater per day. Leachfield laterals could be excavated using a small backhoe or similar equipment and would be threaded through the area to avoid the largest trees. Therefore, the overall extent of impact would be an irregularly shaped polygon within the rectangle area shown in Figure 4. To limit removal of larger tree roots, intact vacuum excavator technology would be used to excavate soil around tree roots. This soil would then be moved away from the root zone with a small backhoe. After tree roots are exposed, the infiltrators would be inserted into the trench and pushed into place underneath the roots. Then the trench would be backfilled with native soil and the exposed roots would left intact and recovered with native soil.

The proposed leachfield site is in open lodgepole pine forest, with a sparse understory of shrubs, forbs and grasses (Photos 1 and 2). Approximately 25 small trees (0.5 – 8 inches in diameter at breast height (dbh)) in each leachfield would need to be removed. Small fallen logs would be relocated either outside the leachfield or burned offsite. Logs too large to be relocated would be cut into maximum lengths of 15-20 feet and dispersed in a natural-looking manner outside the leachfield area.



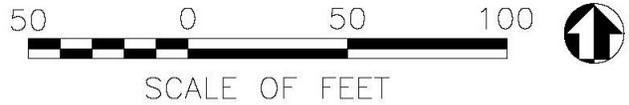
Photos 1 & 2: Leachfield Vicinity

Septic Tanks: A 2,000-gallon septic tank would be placed in the administrative area, and 12,000-gallon tanks would be placed near the day use comfort station (1), and near the campground comfort station (1). Two existing (abandoned and filled) septic tanks would continue to remain near the comfort stations. The 12,000-gallon fiberglass septic tanks would be approximately 44 x 12 x 10-feet and the 2,000-gallon fiberglass septic tank for the administrative area would be approximately 14 x 8 x 10-feet. Excavation for the tanks would require heavy equipment and the structures would be brought to the site on a flatbed truck, lifted off the flatbed, and set into place using a small rubber-tired crane. The project would also require approximately 2,500 linear feet (lf) of sewer pipe to connect the new leachfield to the three septic tanks.



**FIGURE 4 - DEVILS POSTPILE - AREA OF PROPOSED LEACHFIELD
 ALTERNATIVE 1-3 - Relocate Failed Leachfield and Install New Septic Tanks**

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Of this total of 2,500 lf of sewer pipe, about 550 lf is needed to extend from the end of the existing newer sewer force main (150 lf up the road from the sewage lift station installed in 2016) coming from the sewage lift station and going up along the paved road's dirt shoulder up to the northern end of the proposed leachfields. Another estimated 225 lf of sewer force main would extend from the unpaved shoulder of the paved road to the leachfields' header piping. Most of the estimated remaining 1,725 lf of sewer pipe would be used within the leachfields to evenly distribute the wastewater (septic tank effluent) to each of the legs of the leachfield. There is also an estimated 100 lf of new sewer pipe needed to connect the new septic tanks (and holding tank near the sewage lift station) to the existing sewer lines that connect the existing comfort stations to the sewage lift station and the administrative area's sewer lines to the sewage lift station.

For the day use comfort station, the new septic tanks would be in the adjacent day use parking area (Figures 5 and 6). The campground comfort station septic tanks would be constructed to the south side of the comfort station going toward the east and partially in the loop road, and the administrative area septic tank would be constructed where there is an existing manhole behind the superintendent's office.

The new septic tanks for the campground comfort station, day use comfort station, and administration area would be connected to existing sewer lines that presently convey raw wastewater from these areas to the existing sewage lift station.

Sewer Force Main: There would also be a section of new sewer force main constructed from the sewage lift station up to the leachfield areas following the road alignment up to the north end of the secondary leachfield and then running east from the secondary leachfield to the primary leachfield. The section of force main that this replaces would be removed.

Wastewater Holding Tank: To slow the time needed during peak periods for the wastewater to reach the leachfield, a wastewater holding tank (8,000 gallons) (30 x 12 x 10-feet) would be constructed near the sewage lift station. The proposed holding tank would provide additional capacity for the anticipated additional wastewater generated during peak visitation periods (e.g. 4th of July and Labor Day weekends).

Comfort Stations

Day Use Comfort Station

The comfort station and adjacent separate accessible restroom, currently serving the day use area, would not be modified, and would be maintained in their current locations.

Campground Comfort Station

The campground comfort station and adjacent separate accessible restroom would be maintained in their current location. In the future, the buildings could be replaced with new vault toilets if the campground is converted to a day use area. Vault toilets in this area would reduce some operational and maintenance needs.

Overnight Administrative Facilities

Park overnight administrative facilities would retain their current capacity and be maintained in their current locations. There would continue to be one cabin with a kitchen and bathroom, three hard-sided cabins with kitchens, and three tent cabins with no facilities. An employee commons building provides a kitchen and bathrooms for up to six tent cabin residents and bathrooms for up to five hard-sided cabin residents.

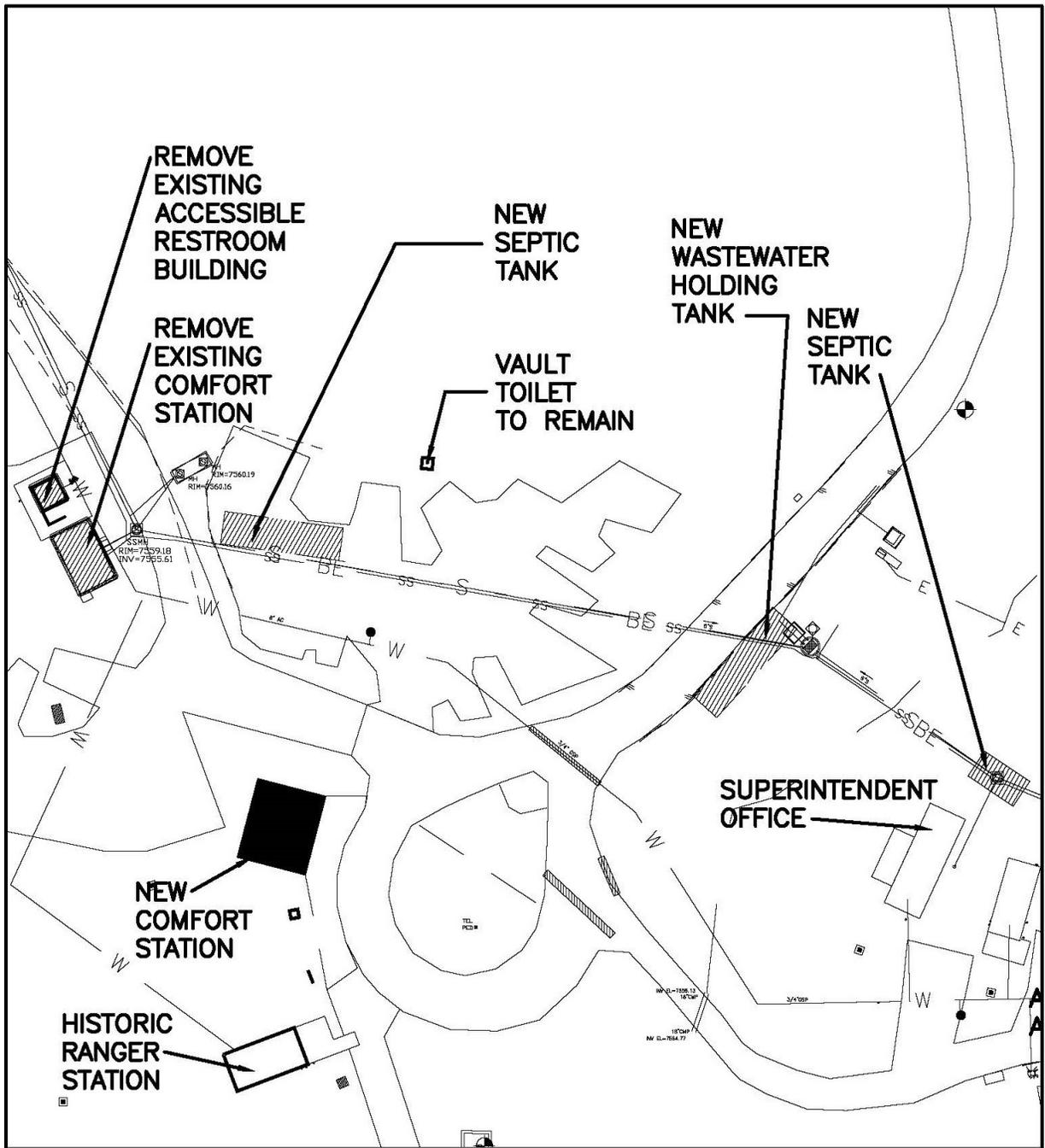
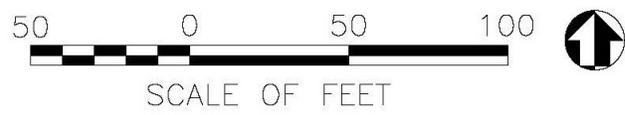


FIGURE 5 - DEVILS POSTPILE - DAY USE AREA
ALTERNATIVE 3 - Relocate Failed Leachfield and Install New Septic Tanks, Relocate and Expand Day Use Comfort Station to Improve Circulation, and Replace Campground Comfort Station in Existing Location.

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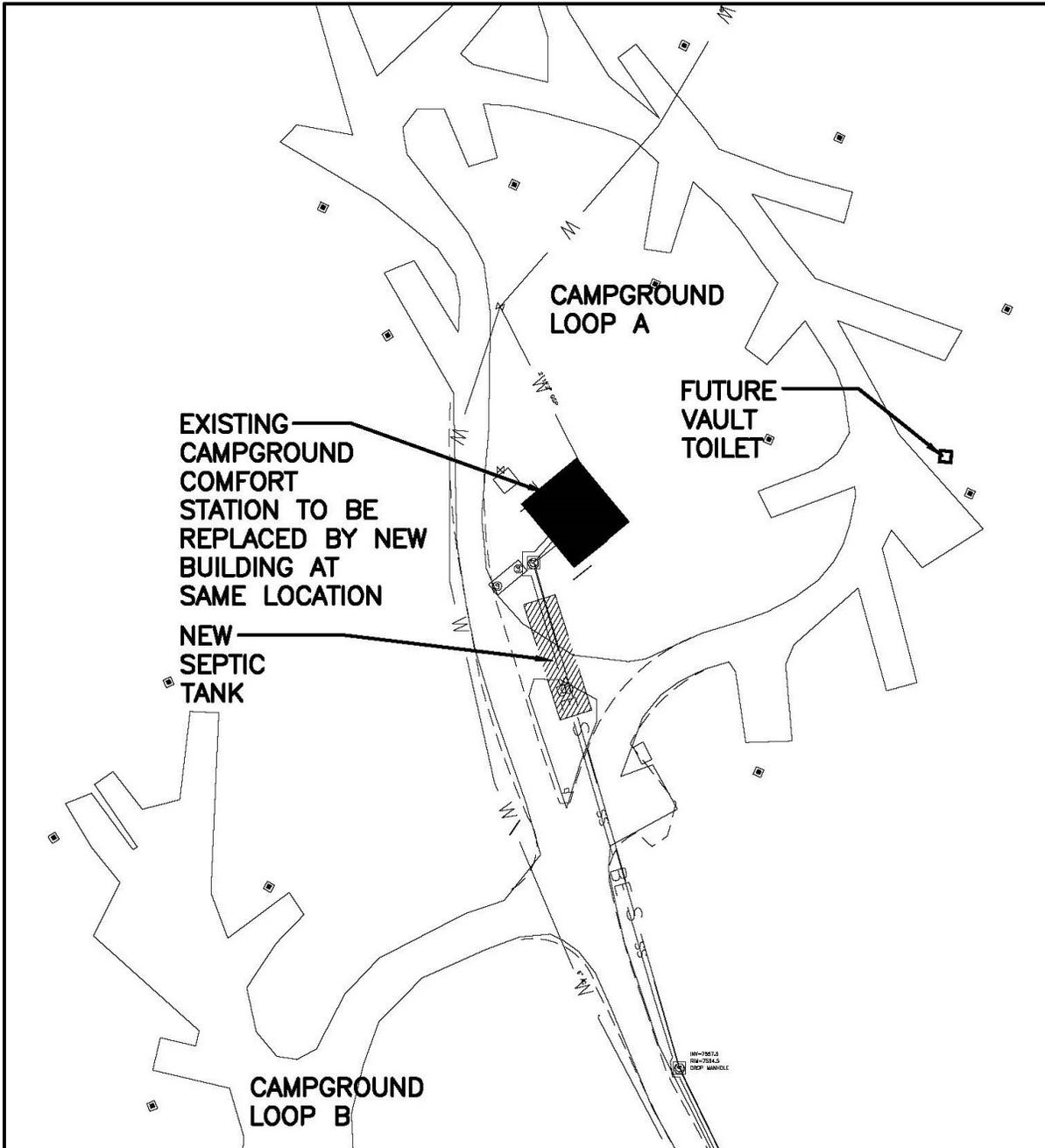
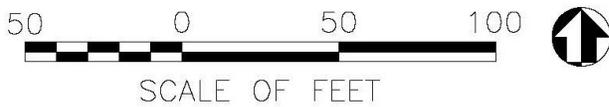


FIGURE 6 - DEVILS POSTPILE - CAMPGROUND AREA
ALTERNATIVE 3-4 - New Vault Toilet and Campground Comfort Station
 Devils Postpile National Monument - KS-PWRO MAY 2021



Staging Areas

Staging for the proposed project would occur in a previously disturbed unpaved parking area near the day use comfort station. Other areas identified for staging, if needed, would be in previously disturbed parts of the administrative area or the maintenance boneyard.

Rehabilitation

Rainbow Falls Septic Tank Rehabilitation

With the replacement of the leachfield, the previously used septic tanks near Rainbow Falls would be filled or abandoned and the leachfield abandoned in place.

Access to the area would require consultation with and may require a formal permit from the USFS. Rehabilitation of this area would occur in conjunction with approval from the USFS and would include planting of native plants and replacement of excavated soils with clean (weed-free) imported fill. Disposition of the sewer pipe would also be in consultation with the USFS and pipes in the monument would also be crushed, removed, or filled.

Peak Management Strategy

Currently, there are frequent shutdowns of the day use comfort station. This is attributed to both the age and the type of plumbing used, and because the comfort station is frequently used beyond its capacity due to the number of visitors that arrive at one time via shuttle bus.

The park has sought expertise to develop a peak management strategy. Monitoring usage during peak periods and shutting off flush toilets as necessary while directing visitors to the vault toilets and, in extreme situations, adding supplemental portable toilets are among the likely options. The wastewater holding tank has been sized to hold two days' worth of wastewater flow (8,000 gallons). This capacity allows for all but the highest peak weekends. Locating a holding tank downgrade from the comfort stations, near the sewer lift station would accommodate some peak periods. Above peak days (e.g. 4th of July and Labor Day weekends and special events) can be accommodated using additional portable or vault toilets.

3. Alternative 3 (Proposed Action/Preferred Alternative): Relocate Failed Leachfield and Install New Septic Tanks, Relocate Day Use Comfort Station to Improve Circulation, and Replace Campground Comfort Station in Existing Location.

As in Alternative 2, as soon as practicable, a new wastewater treatment system (septic tanks and leachfield) would be reconstructed and relocated to NPS-owned lands. The replacement system would consist of the same components and have the same capacity described in Alternative 2.

The differences in Alternative 3 would be related to the replacement and location of the day use and campground comfort stations (Figure 5). The new wastewater treatment system would be constructed within the monument and would consist of new primary and secondary leachfields (constructed together and used alternately), new septic tanks near each primary facility, a new wastewater holding tank, and connections to the existing sewer force main, water, and electrical power.

Preparatory Actions

The new leachfield and septic tanks would require the same percolation and trenching tests for the leachfield and the same excavation to determine exact utility locations described in Alternative 2.

Wastewater Treatment System

Leachfield

The primary and secondary leachfield would be constructed in the same way and would be in the same location described in Alternative 2.

Septic Tanks

Three new septic tanks would be installed as described in Alternative 2.

Wastewater Holding Tank: Actions would be the same as Alternative 2.

Comfort Stations

Day Use Comfort Station

The Day Use Comfort Station, a Mission 66 era building found to be ineligible for the National Register of Historic Places (NRHP) in April 2019, would be demolished and replaced with a new slightly larger, single building. The current accessible restroom would also be removed. Both buildings would be removed in accordance with the law that governs disposal of government property via the General Services Administration (GSA).

The day use comfort station (520 square feet) is undersized for the current visitation and is deteriorating. It was not designed for accessibility. As a result, a small one-stall accessible restroom (375 square feet) was constructed adjacent to it. Both would be replaced with an Architectural Barriers Act Accessibility Standard (ABAAS) compliant, 489-750 square foot (depending on the manufacturer and configuration), water efficient, prefabricated concrete building on the same side of the roadway as the Visitor Contact/Ranger Station (instead of across the parking area) (Figure 5).

Under the current design, the new building would have 2 sinks and 4-5 toilets on the women's side and 2 sinks, 2 toilets and 2 urinals on the men's side. Alternatively, the new building could have 6-8 single sink/toilet stalls with separate unisex entrances. The number and configuration would be dependent on the capacity of the wastewater treatment system (as determined by percolation testing). An outdoor drinking fountain/water bottle filling station and an outdoor camp sink are also part of the current design. Walkways would lead to and around the building (approximately 300 x 3 feet).

Currently visitors must cross the roadway in front of oncoming traffic to get to and from the restroom facility. With this change, visitors would not have to cross the roadway to get to and from the comfort station. Relocation would improve wayfinding and safety by decreasing pedestrian/vehicle conflicts associated with the current visitor drop-off/bus access configuration. Relocation would eliminate problems by locating the building on the same side of the road as the Visitor Contact/Ranger Station and a path would be established between the two buildings (approximately 100 x 3 feet). The current comfort station location would be converted to parking to enable restoration of some of the Riverfront Parking impacting the riparian area (Figure 5).

The frequency of repairs has been such that a single stall may be closed for hours or days, while repair is made and/or replacement parts are procured. The building is also inefficient because its roof is nearly flat, necessitating regular maintenance to the roof structure to ensure that it does not collapse under the area's heavy snow loads.

The new day use comfort station would be close to the Visitor Contact/Ranger Station, which was built in the 1940s in a post rustic style, and which is listed on the National Register of Historic Places. As a result, the new prefabricated building would integrate some design elements from this era to ensure that it is compatible with the Visitor Contact/Ranger Station setting. The buildings would be approximately 55 feet apart.

Campground Comfort Station

The campground comfort station, also constructed during Mission 66, and also found to be ineligible for the NRHP, would be reconstructed in its current location. Depending on visitor needs and/or wastewater treatment system capacity, it could also be replaced with new vault toilets instead. Vault toilets in this area would reduce some operations and maintenance needs and reduce the need for supplemental portable toilets on peak days.

As with the current Day Use Comfort Station, this comfort station is undersized and is not accessible, although similarly, a single stall accessible restroom was constructed later. This building would likely have the same internal configuration (sinks, stalls, urinals) as the Day Use Comfort Station, and it would also retain a camper sink for dishwater disposal. Both buildings would include water bottle filling stations.

Rehabilitation

Actions would be same as in Alternative 2.

Peak Management Strategy

The peak management strategy would vary from Alternative 2. To cover peak use days, a new vault toilet would be constructed in the vicinity of the east side of the small campground loop (Figure 6). That vault toilet would be available consistently to provide relief for the septic system when visitation exceeds the recommended capacity for that facility. This vault toilet would also supplement the one in the day use parking area.

Construction of a new vault toilet facility (2-4 unisex toilets) in the campground would cover approximately 180-360 square feet (depending on the manufacturer), with an additional 200-400 square feet of disturbance for site preparation and landscaping, including hard surfacing to provide accessible pathways. This vault toilet would also provide increased shoulder season flexibility when the flush toilets are closed for the season.

4. Alternative 4: Relocate Leachfield and Install New Septic Tanks, Replace Comfort Stations (Campground and Day Use) In Existing Locations

Actions would be the same as Alternative 3, except for the location of the day use comfort station.

Preparatory Actions

The new leachfield and septic tanks would require the same percolation test for the leachfield and the same excavation to determine exact utility locations described in Alternative 2.

Wastewater Treatment System

Leachfield

The primary and secondary leachfield would be constructed in the same way and would be in the same location described in Alternative 2.

Septic Tanks

Three new septic tanks would be installed as described in Alternative 2.

Comfort Stations

Day Use Comfort Station

The same issues regarding the day use comfort station and its anticipated replacement components described in Alternative 3 would apply to Alternative 4, however the Day Use Comfort Station would be replaced in its current location.

Instead of being moved on the same side of the road as the visitor contact/ranger station area circulation would be modified to reduce potential pedestrian/vehicle conflicts but visitors would still need to cross the roadway to access the Visitor Contact/Ranger Station (Figure 7). The buildings would be so close together that there would be no need for signs to direct visitors. Pathways to the comfort station would be established similar to Alternative 2.

Campground Comfort Station

As in Alternative 3, the campground comfort station would be reconstructed in its current location and would include a camper sink and water bottle filling station.

Rehabilitation

Rehabilitation actions would be same as in Alternative 2.

Peak Management Strategy

The peak management strategy would be the same as Alternative 3.

B. Impact Avoidance, Minimization and Mitigation Measures

The action alternatives include best management practices, and impact avoidance, minimization and mitigation measures described in the Environmental Consequences section. Among these are:

- Applying sustainable design criteria to all new and renovated Pacific West Region facilities, integrating sustainable materials and systems to the maximum extent practicable to provide for a cost effective, durable facility with reduced impacts on the environment (PWR Directive # 048).
- Measures identified in the Finding of No Significant Impact (“FONSI”) for the GMP (NPS 2015) would continue to apply to actions in this document.

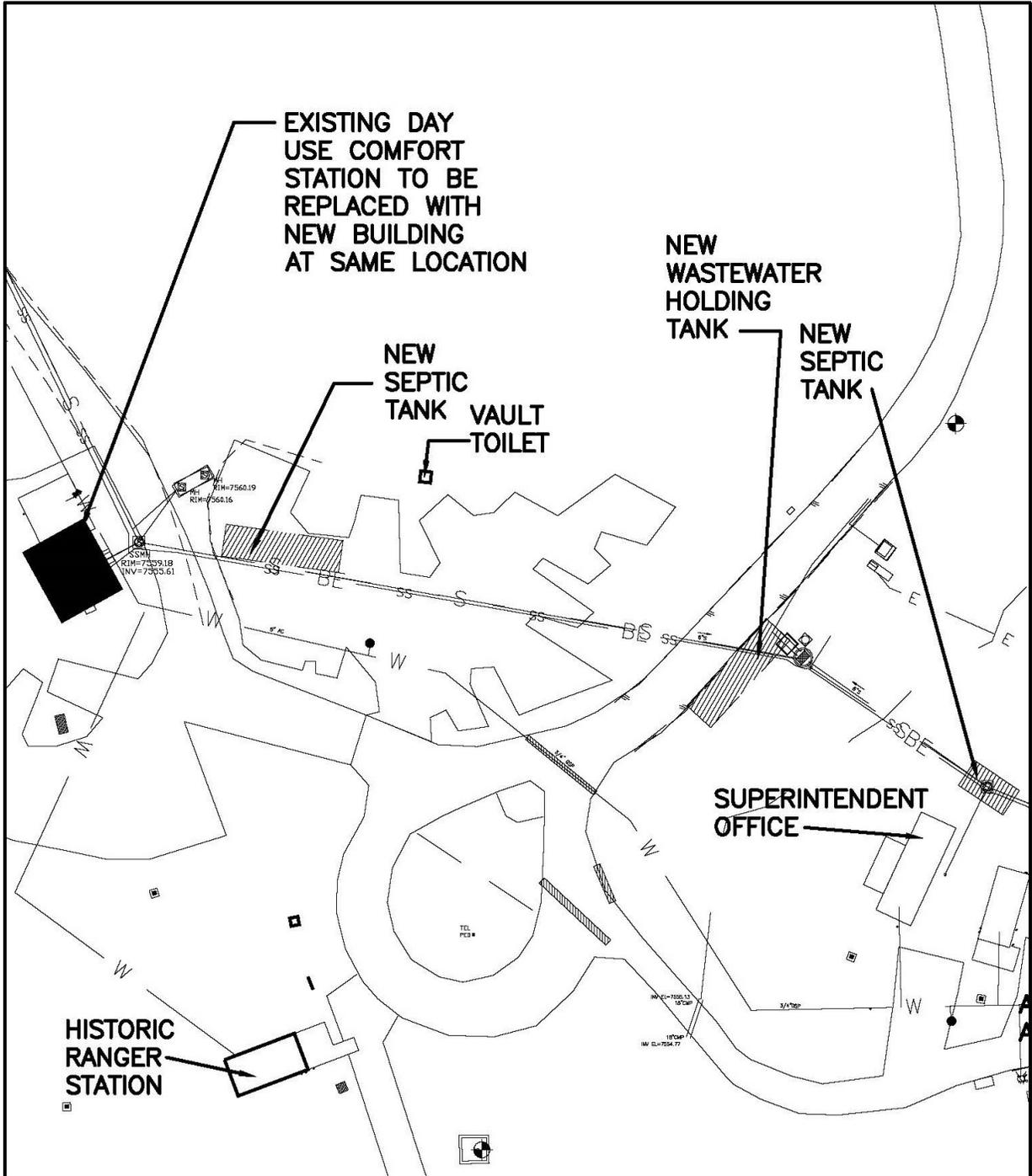
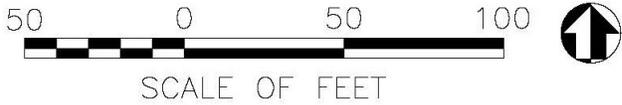


FIGURE 7 - DEVILS POSTPILE - DAY USE AREA
ALTERNATIVE 4 - Relocate Leachfield and Install New Septic Tanks, Replace Comfort Stations (Campground and Day Use) In Existing Locations

Devils Postpile National Monument - KS-PWRO MAY 2021



C. List of Alternatives and Actions Considered but Eliminated from Detailed Study

Preliminary Alternative Development

A range of alternatives for the toilet facilities and leachfield at the park was considered.

In a January 2020 Choosing by Advantages/Value Analysis workshop (NPS 2020), participants considered a full range of seven options for facility and leachfield replacement. As described below, these ranged from the no action alternative (not replacing the leachfield) to an alternative that replaced all toilet facilities in the monument with vault structures. This last alternative was dismissed because it did not meet criteria for employees living and working within the monument because it would affect employee morale and retention. Other alternatives were dismissed because of the likelihood of undiscovered cultural resources for new facilities close to the Soda Springs Meadow, wetlands, or Upper Middle Fork San Joaquin River. Eventually, alternatives that included USFS land were also dismissed because there was and is no formal agreement between the NPS and USFS for testing or construction. The preliminary alternatives considered in the CBA/VA were:

1. No Action
2. Construct new septic system in existing footprint at Rainbow Falls Trailhead on USFS land (included replacing entire system from lift station to leachfield)
3. Construct septic tanks in day use parking area and install new leachfield in existing footprint at Rainbow Falls Trailhead (USFS land)
4. Locate septic tanks at USFS Overnight Hiker Parking area: The USFS lands initially had the following advantages: sustainable location, previous disturbance footprint, relocates raw sewage disposal offsite to non-sensitive resources (well away from eligible wild and scenic river).
5. Same as Alternative 4, but construct vault toilets in campground, flush toilets in Day Use Area.
6. Construct vault toilets in the day use area and campground, with flush toilets in Residential Area. The septic tank, pumping vault and leachfield would be in the current housing area and no lift station would be needed.
7. Relocate septic tanks to near NPS boneyard (before lift station and leachfield)

Alternatives Considered but Dismissed

The following alternatives or variations of these preliminary alternatives were also considered initially feasible, but were dismissed from additional consideration because they did not meet the purpose and need, had more impacts, or were later determined not economically or environmentally feasible as stated below.

- *Not Replacing the Wastewater Treatment System*

This alternative would require the park to convert all administrative and visitor facilities to vault toilets and is inconsistent with the monument's General Management Plan's direction to retain and improve visitor and employee facilities. This alternative was considered but dismissed because it would make existing facility investments (including much employee housing and the relatively new employee kitchen/shower facility) obsolete. This would be unacceptable because of the investment in administrative and visitor use facilities in the monument and because of the

high visitation (especially day use). This alternative would also (as noted above) make it difficult to recruit and retain employees for the monument.

- *Constructing Only an Administrative Wastewater Treatment System*

Although constructing a smaller domestic wastewater treatment system to serve only administrative facilities would be feasible, removing flush toilets from visitor facilities would adversely affect visitor enjoyment. Vault toilets would also need a high degree of maintenance due to the volumes of waste that would be generated.

- *Locating a Leachfield in the Campground*

California's On-site Wastewater Treatment System (OWTS) policy requires that a septic system leachfield (referred to in the regulations by the more general term of 'subsurface disposal system') be located such that, "No part of the disposal system shall extend to a depth where waste may pollute groundwater." (This statewide requirement is also part of the Madera County Local Area Management Plan (LAMP).) In the case of the park, areas close to the campground do not meet these requirements because they are estimated to be too close to groundwater levels due to the proximity to and elevation above the river. The estimated difference between the highest and lowest groundwater levels is not far enough apart to allow the required separation distance between surface and groundwater. Therefore, a treatment system in the campground could not properly contain wastewater.

Locating the leachfield in A Loop of the campground was also eliminated from consideration due to the proximity of the eligible Wild and Scenic San Joaquin River and a small wetland in the campground A Loop that may be potential Yosemite Toad habitat.

- *Relocating the Leachfield and Septic Tanks Near the Rainbow Falls Trailhead*

The existing leachfield is failing, and the septic tank is undersized. This action would also have required the replacement and maintenance of the force main and nearly 1.5 miles of sewer pipe between the monument and the Rainbow Falls Trailhead. Although there was a suitable area available for the new leachfield with minimal resource impacts, this alternative was dismissed because although the impacts to construct the leachfield would be similar, replacing it and the force main would require more maintenance and would also require permission from and a formal agreement with the USFS.

- *Relocating the Leachfield in the USFS Overnight Hiker Parking Area*

As noted above, during preliminary analysis, this alternative originally was the most viable because it had the following advantages: a sustainable location, previous disturbance footprint, and relocation of raw sewage disposal offsite to a non-sensitive resource area (well away from the eligible wild and scenic river). During pursuit of percolation testing and drilling in the Overnight Hiker Parking Area, however, the USFS and NPS could not reach a formal agreement to allow this alternative to be tested and/or constructed. Therefore, it was dismissed.

- *Locating the Leachfield in Other Places*

Other potential locations for the leachfield investigated had more rock outcrops, other unsuitable site conditions (such as surface water resources), were not previously disturbed, or were further away than the proposed site. Madera County and California state requirements for on-site wastewater disposal fields require minimum distances to surface water courses, wet soils, depth to bedrock, maximum allowable cross slopes, and other factors.

- *Locating the Leachfield in the NPS Boneyard (Administrative Area)*

The proposed leachfield location in the boneyard was dismissed because the area is too small to accommodate the proposed secondary leachfield required by Madera County without being 100-150 feet from the potable water well. In addition, this alternative would have more impacts because it would require extending the force main approximately 250-300 feet through a heavily forested glade. Although the leachfield can be designed to thread in amongst the trees within the glade, extending the force main would require much more tree removal.

Chapter 3: Affected Environment and Environmental Consequences

A. Introduction

Affected Environment: Information in this section is derived from a comprehensive review of existing information about the project area within the park, and also as applicable to the Rainbow Falls leachfield and sewer line outside the park. That information includes the Devils Postpile National Monument GMP (see <http://parkplanning.nps/depo>) (NPS 2015), Fire Management Plan (NPS 2018), other natural and cultural resources management plans, and park planning documents. Management, research, and analysis throughout the history of Devils Postpile National Monument has provided a wide array of information about the monument.

The 2018 Fire Management Plan summarized the monument's resources. The monument protects 800 acres of geological formations, mixed conifer forests, shrublands, and riparian and wetland communities. It is surrounded by the Inyo National Forest and is part of one of the largest contiguous wilderness complexes in the lower 48 states. Approximately 85 percent of the monument is designated wilderness and is managed in conformance with the 1964 Wilderness Act. The monument provides access to the 231,279-acre Ansel Adams Wilderness and the 651,992-acre John Muir Wilderness Area. The Pacific Crest National Scenic Trail managed under the National Trails System Act, and the John Muir Trail traverse the monument's western section (NPS 2018).

Environmental Consequences: This section analyzes the potential environmental consequences (impacts or effects) that would occur as a result of implementing the alternatives.

Recent regulation changes by the Council on Environmental Quality state that:

The environmental impact statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration, including the reasonably foreseeable environmental trends and planned actions in the area(s) (40 CFR 1502.15).

The discussion shall include:

The environmental impacts of the proposed action and reasonable alternatives to the proposed action and the significance of those impacts. The comparisons of the proposed action and reasonable alternatives under § 1502.14 shall be based on this discussion of the impacts (40 CFR 1502.16).

Reasonably foreseeable environmental trends and planned actions in the area also must be included.

These reasonably foreseeable environmental trends include ongoing climate warming, which may affect the amount and distribution of precipitation. According to the Natural Resources Condition Assessment (Kuhn and Whitaker 2014: xv):

“... data have been used to document a rise in minimum temperatures across the region. This warming has likely driven changes in the amounts and especially timing of surface water flows, and may be starting to impact the amount of snowpack in and around

DEPO, thus affecting systems and species that depend on snowmelt. Precipitation amounts in the area have been variable, but appear to be within historic ranges.”

Planned actions in the area include:

- Reds Meadow Road Repair and Improvement Project (2023-2024)

This Federal Lands Access Project would improve the deteriorating 8.3-mile Reds Meadow Road outside the park. The Reds Meadow Road provides the only road access to the park. The project scope includes reconstruction and widening of the upper 2.5 miles to two lanes of traffic, repaving, and some slight realignments to the lower 5.8 miles of Reds Meadow Road. The project design includes retaining walls, slope stabilization, and drainage improvements.

The collaborative project would provide much-needed safety and sustainability improvements to the deteriorating INF road corridor and would include a plan and commitment for annual and cyclic road maintenance from the Town of Mammoth Lakes. Improvements would facilitate emergency response to the valley, allow for safe egress, and improve traffic safety.

B. Soils

Soils in the monument are of volcanic and granitic origin and cover slopes ranging from 0-75 percent. Part of the monument is covered in loose pumice deposits, which are easily eroded by wind and water and are often bare or have limited vegetation, while other areas are comprised of rock outcrops. The monument Natural Resources Condition Assessment (NRCA) confirms this, noting that soils in the park are thin and have high concentrations of volcanic ash and pumice, leaving many areas mostly barren with some litter (Mutch et al., 2008a *in* Kuhn and Whitaker 2014). The formation of soils is slow because of sparse vegetation, insufficient moisture, and steep slopes (Kuhn and Whitaker 2014).

According to the NRCA (Kuhn and Whitaker 2014):

“Due to the relatively recent glaciations, Sierra Nevada soils are generally poorly developed, rocky, and generally low in fertility, the exceptions being deep soils in some basins and canyon bottoms where soils can be quite deep. Soil depth generally decreases with increasing elevation and is thinnest in areas where past heavy glaciations were most persistent. The soils in river basins of the Sierra Nevada have a high proportion of glacial tills left behind in lateral or recessional moraines. Glacial tills are usually composed of granite from high elevations (Mutch et al., 2008a *in* Kuhn and Whitaker 2014:8) though in some areas, metamorphic and volcanic rocks can make significant contributions. Unlike most of the Sierra Nevada, the river and stream valleys within DEPO have glacial deposits that contain a greater diversity of rock type; an abundance of volcanic, metamorphic, and granitic bedrock occur within the watershed (Huber & Eckhardt, 2001 *in* Kuhn and Whitaker 2014:8).”

Comparatively little analysis of soils has been completed in the monument. There is a parkwide map of soils and soil complexes done at a coarse scale (NPS 2012). Five soil types (four soils) are mapped.

- 104: Xeric Vitricryands-Typic Cryorthents, tephritic complex, 0-45 percent slopes

- 117: Typic Cryorthents-Rock Outcrop-Lithic Cryorthents complex, tephritic, 0-30 percent slopes
- 148iw: Stecum-Salt Chuck families complex, 30-75 percent slopes
- 164: Vitrandic Xerochrepts-Rock outcrop complex, 30-60 percent slopes
- 164iw: Vitrandic Xerochrepts-Rock outcrop complex, 30-60 percent slopes

The campground/day use area and administration areas are mapped as Vitrandic Cryorcepts/Rock Outcrop Complex 30-60 percent slopes. Earlier (2015) percolation testing by the USFS in the Rainbow Falls Trailhead area found soils capable of allowing for leachfield construction and in the absence of percolation testing in the proposed leachfield area, as well as conformance to Madera County and state guidelines, has been the basis for the preliminary design.

C. Impacts on Soils

Impacts from Alternative 1

There would be no additional impacts on soils. Existing impacts, such as area compaction from ongoing use of the impaired leachfield would continue. Soils within the USFS-located leachfield would continue to have higher soil moisture and nutrients than surrounding soils. Area soils would also continue to be modified due to excavation and fill used to construct the existing leachfield. Soils in the vicinity of existing abandoned facilities and visitor use areas would also continue to be modified from compaction, loss of vegetation and from long-term localized changes in soil profiles, soil productivity and loss.

In the long-term, compaction from locating portable toilets on the edges of existing parking areas and other hardened surfaces would be anticipated to have no additional effects on soils.

Impacts from Alternative 2

Direct effects on soils from modifications to area facilities, as well as construction of new facilities, such as installing three new septic tanks, a wastewater holding tank, and constructing new leachfields, would include soil removal, profile mixing, and compaction from excavation and grading. During grading and excavation, soils would be mixed, moved, backfilled with native material and/or imported fill, and then compacted. Disturbance of soils would cause long-term localized changes in soil profiles, decreased soil productivity, especially where surfaces were hardened or compacted, and vegetation loss – temporary (for utility lines and septic system lines) and long-term where new permanent aboveground facilities were constructed.

Testing the leachfield for percolation rates would have short-term adverse effects on areas that would later be used for the primary and secondary leachfields over the long-term. Similarly, excavation to locate existing utilities would facilitate linking existing utilities to the new facilities but would primarily affect areas that have undergone previous excavation.

Construction of the new leachfield would have limited long-term adverse effects on soils in a previously undisturbed area from loss of vegetation and excavation in two areas, each affecting approximately 6,000 square feet, within a larger disturbance footprint of about 18,000 square feet (an area of approximately 110 feet by 145 feet for each leachfield). This larger area would allow for aligning the leachfield infiltrator lines to avoid the largest trees, and result in an

irregularly shaped area of disturbance. Replacement of native soils over infiltrator lines and the addition of approximately 370 cubic yards of fill (clean silica sand) needed to create the disposal area (20 legs in each of two leachfields, 5-feet wide by 100-feet long) would also disrupt the area soil profile. Introducing wastewater would also add contaminants and would increase opportunities for those contaminants to spread beyond the leachfield if overuse or future failure occurred.

Constructing two new septic tanks for the day use and campground comfort stations and a wastewater holding tank in the vicinity of the sewage lift station would affect an area of approximately 528 square feet (44 x 12 x 10 feet) at each location. There would also be a section of new sewer force main from the sewage lift station up to the leachfield areas following the road alignment up to the north end of the secondary leachfield and then running east from the secondary leachfield to the primary leachfield. The sewer force main would be installed in a trench with a width of 2-feet and depth of 30-36 inches. Within the roadway, the sewer force main would extend 550 linear feet before it veers approximately 225 linear feet to the east away from the road to the primary leachfield. Other sewer line would be installed within the leachfield and would connect the septic tanks.

Covering and compacting soil over the septic tanks and leachfield would result in small effects in permeability, which could affect soil moisture, and water storage capability in the vicinity of the tank installation. If exposed soils were not regraded and/or replanted, this could cause localized changes in subsurface water movement and increase runoff and soil erosion.

There would be few additional impacts from retaining the current comfort stations. Although future modifications could convert the campground comfort station to a vault toilet facility, it would be constructed in approximately the same area, so that effects from demolishing the former comfort station would be part of the new construction project, resulting in ongoing development in an existing disturbed area that would result in a smaller footprint than the existing comfort station.

Impacts from Alternative 3

Impacts would be the same as Alternative 2 for the context of impacts and for new impacts associated with utility discovery, percolation testing, and the new septic system lines and leachfields.

In addition, replacement of the two existing comfort stations (campground and day use) would result in continued permanent soil modifications and vegetation loss at the building sites and where surfaces are hardened to accommodate other visitor infrastructure, such as pathways. While the campground comfort station would be replaced in the same location as the current building, resulting in excavation of up to 800 square feet (an estimated 26 x 30 x 2-3 feet, depending on the manufacturer) in the same place, the day use comfort station would be relocated (Figure 5) and the existing day use comfort station used for parking. Although the new location is also previously disturbed, the subsurface has not been disturbed to the same degree as the site of the existing building. It would have similar excavation and disturbance (800-900 square feet). There is little surface vegetation and it is unlikely that tree removal would be needed in the new location.

Because of the new comfort station location, extensions of these utilities from their existing locations would require a trench 2-feet wide by 18 inches deep for water lines. The sewer line

trench would be approximately 2-feet wide and 30-36-inches deep and could also contain the electrical conduit. Where possible, these lines would be in existing disturbed areas, such as in parking areas, or along roads or trails. Overall, future impacts would be similar to existing impacts. The current site containing two buildings (comfort station and accessible unit) would be rehabilitated and the new site would be developed with one building that includes accessible components.

In areas without surface hardening, such as areas adjacent to paved or gravel pathways, impacts could include prolonged or repeated trampling where visitors did not follow these pathways. This would gradually decrease vegetation cover and expose bare ground to the direct erosive impact of rainfall and snowmelt. Depending on the extent, increases in erosion may expose plant root systems and lead to decreased vigor or death in plants. These impacts would be expected to occur locally in the vicinity of buildings and associated components, and adjacent to established walkways and on other pathways that may develop in the vicinity.

Because of planned scarifying and revegetation during restoration, soils remaining uncovered due to the new development would not be expected to remain compacted. Therefore, some impacts to soils and vegetation would be temporary. Other areas, including the new restroom, vault toilets, and walkways (approximately 300 x 3 feet) would be impermeable because they would be compacted and surfaced. Approximately 1,500 square feet of impermeable area is already present with the two Mission 66 comfort stations (16 x 25 feet each), and accessible comfort stations (20 x 17 feet) and their associated walkways. Altogether there would be an additional approximately 1,000 – 2,000 square feet of new impermeable surfacing compared to the current footprint. In this project, because of the relocation of the day use comfort station, there would be the potential for restoration of some riverfront parking to reduce the current area of compacted soils in that area.

Peak Use Vault Toilet

Construction of a new vault toilet facility (2-4 unisex toilets) in the campground would cover approximately 180-360 square feet, depending on the manufacturer). There would be approximately 200-400 square feet of disturbance for site preparation and landscaping, including hard surfacing to provide accessible pathways from the campground. Most of this disturbance would be within the footprint of an existing campsite so very little new surface disturbance would be required. Excavation for the vaults and footings would be approximately 15 x 17 x 5 feet (1,275 cubic feet).

Impacts from Alternative 4

Impacts would be the same as Alternative 2 from the utility discovery, percolation testing, and septic system lines and leachfields and the same as Alternative 3 for the peak use vault toilet and campground comfort station. Differences would be from retaining the day use comfort station in its current location.

Instead of being constructed in a new location, however, the day use comfort station would be reconstructed on the same site as the existing building. Therefore, impacts for the day use and campground comfort station (in Alternative 3) would be the same, with excavation, grading and construction in the same area and same site as the existing comfort station.

Impacts from Reasonably Foreseeable Environmental Trends and Planned Actions

Adverse impacts to soils from reasonably foreseeable actions, such as the relocation of the maintenance facility, include compaction, soil mixing, and soil loss from removal and erosion. These effects have resulted from development and concentrated visitor use in the park, as well as in areas where soils have been disturbed and revegetation has not occurred naturally or been undertaken by the park. Other impacts include an overall decrease in soil infiltration, where hardening of surfaces (roads, walkways, buildings) has occurred from the development of facilities within the park.

There would also continue to be a small range of adverse and beneficial effects on soils from use and operation of the monument, including from continued visitor use and from efforts by the NPS to maintain facilities and to restore areas with impacts. Soils would continue to benefit directly and indirectly from actions to direct or redirect visitor and administrative uses away from activities that cause soil erosion and because of specific actions that have protected sensitive soils from development. Because some roads and parking areas are unpaved, there would continue to be a range of erosive impacts from runoff and windblown loss of the fine-grained materials covering these surfaces (especially where gravel surfacing has been altered or is minimal).

Existing cumulative impacts, from soil disturbance, compaction and erosion in high visitor use areas would continue. Staff and visitors, including hikers, fishermen, and stock users, would continue to use existing trails and social trails, resulting in small short- and long-term adverse effects, where they ventured off trail. Effects would be greater where new social trails formed from changes in visitation patterns, which would be most likely in high visitor use areas. These effects would include trampling vegetation and compacting soils, leading to potential social trails at overlooks, on popular trails and in the campground.

Impacts associated with existing social trails would also continue to include soil erosion, compaction, and vegetation trampling, including broken plant parts, stunted or dead plants. Other ongoing impacts that would affect soils and vegetation include natural and prescribed fires and fire management activities, removal of nonnative invasive plants, and natural soil erosion from wind and water.

Although the Reds Meadow Road rehabilitation project would also have a wide range of adverse and beneficial effects, projected work would occur outside the east boundary of the monument.

Impact Avoidance, Minimization and Mitigation Strategies

The following impact avoidance, minimization or mitigation measures would be used to reduce impacts on soils from implementation of the action alternatives:

- New facilities would be built on soils suitable for development.
- Staging areas would be located where they would minimize new disturbance of area soils (such as in parking areas).
- The project construction areas would be narrowly defined to minimize disturbance outside building footprints. This includes clearly marking and delineating construction limits using fencing or other means.
- Where possible, existing roads, trails and established pathways would be used to access construction areas.

- Soil erosion would be minimized by limiting the time soil is left exposed and by applying other erosion control measures such as erosion matting, silt fencing, and other measures in construction areas to reduce erosion, surface scouring, and discharge to water bodies.
- Excavated soils would be reused to the extent possible.
- Project managers would be required to implement the monument's invasive plant management prevention and treatment program.
- Once work is completed, construction areas would be revegetated with appropriate native plants in a timely period according to revegetation plans.
- Where excavation occurs, approximately one inch of reserved topsoil would be excavated and stored separately and replaced upon back-filling.

Conclusion: Existing impacts would continue in Alternative 1. In Alternatives 2-4, there would be new impacts from soil percolation testing, test drilling and from construction of the new leachfields. In Alternatives 2-4, except for the new leachfields, most additional impacts to soils would occur in areas previously affected by monument development. In some cases, the excavation would be deeper than that previously affecting these areas. New fill would be brought in and excavated soils would need to be removed. The relocation of the day use comfort station in Alternative 3 and the new vault toilets in Alternatives 3 and 4 would also affect a small area of undisturbed subsurface soils in previously disturbed areas. Combined, these effects would be less than overall impacts from previous development in the monument (Alternative 1) and would not affect sensitive soils.

D. Water Resources

Devils Postpile, along with other Sierra Nevada national parks, “protects some of the least altered aquatic systems in the Sierra Nevada (with some notable exceptions), but” is “still subject to many of the same impacts affecting aquatic resources throughout the region. These include dams and diversions, altered fire regimes, atmospheric deposition of pollutants, changing climate, introduction of nonnative plant and animal species, and local anthropogenic disturbances (Kuhn and Whitaker 2014: 11).

Surface Water Hydrology: The Middle Fork San Joaquin River flows from north to south, with a short detour into the Inyo National Forest and back, before it reaches the southern part of the monument where it flows over Rainbow Falls and continues downriver to the confluence of Kings Creek and the north and south forks of the San Joaquin River. In the northern portion of the monument, it meanders through meadows, then begins to descend more rapidly, with scattered pools, rapids, cascades, and waterfalls. The San Joaquin River is an important part of California's water supply system.

Since 2009, there has been a stream gage within the park, just upstream of the campground, however its record is relatively short and flooding data specific to the park is therefore sparse. However, San Joaquin River flow monitoring is a high-priority long term project and is coordinated with the park, Sierra Nevada Inventory and Monitoring network, and the U.S. Geological Survey (USGS). The closest longer-term gage was on the North Fork of the San Joaquin River, approximately seven miles west of the monument. Although no longer functional, it has a record of approximately 25 years. It also was at a similar elevation and drained a similarly sized watershed to that of the Middle Fork.

Within the park, there are expansive complexes of springs that form creeks and associated shallow groundwater aquifers which are responsible for creating extensive wet meadows and wetlands (7.5 percent of the monument). Riverbank condition within the monument boundary is generally stable since much of the riverbed and bank is hardened bedrock or boulders. A small number of high-visitation areas along the riverbank, however, exhibit substantial vegetation disturbance and soil erosion. Fencing limits resource degradation from trampling in several of these high-visitation high-impact areas, while river access is maintained in reaches with hardened or resistant substrate. The monument has also developed indicators and standards to monitor and mitigate effects of social trailing in sensitive areas near the river.

There is a small drainage gully within the proposed project area for the leachfields that is present as a result of stormwater runoff from the road (Photo 2). It flows only when there is substantial precipitation.

Floodplains: Most of the monument's infrastructure is located near the Middle Fork San Joaquin River. The ranger station, day use comfort station, campground, and other visitor facilities, such as some parking, are within the 100-year floodplain (NPS Water Resources Division 2011).

The boundary of the park stretches over approximately 2.5 miles of the river. Most of that area is wilderness and is characterized by steep cliffs, and a narrow bedrock gorge. The housing and maintenance area are located at the farthest margins on the left bank floodplain terrace. The river in this area flows through a low-gradient meadow and contains classic wide meander bends. The campground, day use area, and the Visitor Contact/Ranger Station are located closer to the river. A side channel near the campground drops into the picnic area and then the meadow. Bedrock constrictions upstream and downstream confine the river flow within the portion of the monument that is wide and flat.

Evaluation of the stream gage record on the North Fork of the San Joaquin River for a 2011 NPS Water Resources Division report found that floods were documented in winter, summer, and spring. As a proxy model for the park watershed, it suggests that floods could occur any time of year, including when the campground is open/occupied. Because there are numerous structures that could be affected by flooding, this EA includes an attached Floodplains Statement of Findings (FSOF) (Appendix 1) that documents not only actions in the EA, but also actions that were not described in a GMP FSOF. Although this FSOF was required for actions in the GMP (NPS 2015), completion was delayed. As a result, this EA FSOF also includes the GMP actions.

Groundwater Hydrology: The Upper Middle Fork San Joaquin River is located close to the campground and administrative areas and the area is under snow cover much of the year, therefore groundwater is relatively close to the surface (an estimated 10-100 feet) in many areas. In the campground, which is closer to the river, groundwater is anticipated to be closer to the surface. As described in Alternatives 2-4, proposed percolation testing and test wells would be used to determine the actual proximity of groundwater to the leachfields. Per Madera County Local Area Management Plan (LAMP) requirements, these must and would retain the required separation distance.

Water Quality: Water quality in the Upper Middle Fork of the San Joaquin is considered excellent (Kuhn and Whittaker 2014). Because the headwaters and most areas upstream are in wilderness, there is very limited human development in the upper watershed. Higher than background concentrations of organic nutrients and animal-derived organisms such as fecal

coliform, *Enterococcus coli*, and *Giardia lamblia* have been detected and are attributed to stock use and recreational activities. Water quality in the watershed may also be degraded by wet and dry deposition of wind transported pollutants originating in the Central Valley. Deposition of nitrogen, sulfur, or phosphates can have disproportionately large impacts on Sierra aquatic ecosystems due to the naturally low concentrations of these substances in Sierra waters. The park has little information on detection of the presence and trends of this transport, due to the high cost of monitoring these trace chemicals in high-elevation streams and lakes (generally not within the park boundary).

Water Quantity (Use): The monument uses approximately 4,500 gallons per day of water for park operations. This includes water use for the campground, two comfort stations (flush toilets and handwashing), park housing, maintenance, and administrative operations. No adverse health effects have been reported from use of this water, which is sampled regularly as a public water supply per the Safe Drinking Water Act. The water comes from a deep groundwater well, located uphill from the campground, which pumps approximately 28 gallons per minute, using about 4,500 gallons per day when the comfort stations are open.

Wetlands: The monument includes over 40 acres of vegetated wetlands dependent on river-derived surface or groundwater. Dominant vegetation types in these wetlands include herbaceous sedge (*Carex* spp.) and rush (*Juncus* spp.) communities as well as shrubby willow stands (Denn and Shorrock 2009 in NPS 2015). Soda Springs Meadow – a wetland complex supported by the river and visited by most travelers to the monument – contains the greatest diversity of invertebrates per area observed in the Sierra Nevada (Holmquist and Schmidt-Gengenbach 2005 in NPS 2015), however the proposed project area avoids these and other wetlands.

E. Impacts on Water Resources

Impacts from Alternative 1

Small existing impacts to hydrology and floodplains, water quantity and water quality would continue seasonally under Alternative 1. These impacts would be from the continued use of water for park operations and the continued disposal of wastewater.

Surface Water Hydrology and Floodplains: There would be no additional effects on floodplains. Existing impacts in the floodplain, including the location of the existing comfort stations, and some parking, such as the Riverfront Parking, would continue. Even without the proposed modifications to the wastewater treatment system, a Floodplains Statement of Findings (FSOF) was required for the GMP, under Executive Order 11988, to document the effects on and mitigation measures for retaining or reconstructing facilities in the regulatory floodplain.

Numerous facilities, including a portion of the campground and day use area as well as several buildings, including the comfort stations and Visitor Contact/Ranger Station, are in the regulatory floodplain. This was identified by an NPS Water Resources Division Trip Report (2011) in support of the GMP (NPS 2015). Based on analysis for the FSOF, although part of the campground is within the presumed 100-year floodplain, flooding is unlikely to surprise overnight campers without warning. While most flooding has occurred in winter or spring, there is the possibility that late summer thunderstorms could cause a small flood peak. Effects would be most evident in the overflow channel near the campground, where flood flows may

reach high velocities before overbank flow occurs (NPS Water Resources Division 2011). Flooding, in the fall or winter, however, could also affect the Visitor Contact/Ranger Station or comfort stations. Anecdotal accounts have documented that the height of the water from a flood with a predicted 100-year return interval in January 1997 reached the level of a lower bookshelf, about three feet above ground level in the Visitor Contact/Ranger Station (NPS Water Resources Division 2011). That flood is also a well-documented flood of record for the Merced River, approximately 35 miles from the park. The potential risks of the leachfield and septic tanks located in proximity to the Upper Middle Fork San Joaquin River is mitigated by the subsurface location of the tanks and leachfields that would not be impacted by transient floods. As described in the Floodplains Statement of Findings, anticipated flooding would be low velocity and is not likely to induce scouring. The leachfields are located well above the expected 100-year and 500-year floodplain.

Groundwater Hydrology: Where high groundwater levels occur, water would be displaced from the physical locations of the septic tanks, however the proposed locations of the septic tanks are not within known or expected areas of high groundwater levels, therefore these impacts would not affect groundwater hydrology.

Water Quantity (Use): Existing operations at the campground and the presence of development in the vicinity of the San Joaquin River would continue to affect water quantity. Existing water use for visitors includes the campground (one comfort station and accessible toilet/water spigot serving 20 campsites), day use area (one comfort station and accessible toilet/water spigot, and vault toilets), and visitor contact station. In addition to this, continued use of water for administration includes four housing units, a shower/laundry facility, and the park maintenance area.

Water Quality: Without restoration, ongoing impacts to water quality from runoff associated with day use and campground parking areas near the San Joaquin River would continue. Subsurface filtration of water would also continue from the existing wastewater treatment leachfield at the Rainbow Falls Trailhead, located more than a third of a mile from the San Joaquin River. Since 2019, the amount of wastewater disposal at the Rainbow Falls Trailhead leachfield has also decreased, due to the USFS discontinuing use of flush toilet facilities linked to it, and more recently from ongoing closure of the monument's campground.

Impacts from Alternative 2

Surface Water Hydrology and Floodplains: An erosion gully formed by stormwater runoff from the road is located between the proposed area for the two leachfields; a small ephemeral drainage runs south of the proposed project area (Photo 2). Neither would be altered by the proposed construction of the infiltrator lines for the leachfields and stormwater runoff would be managed to reduce continued erosion. Roadway curbing has been channeling stormwater to this area. It is proposed to be modified in a future road project; however, it would continue in the interim unless design modifications could be made within the current project. Access to the project area would be from the roadway on the west and south as it curves around the site. Requirements for installing leachfields ensure that they are at least 50 feet from ephemeral drainages and 100 feet from perennial drainages. This allows enough space to enable filtration through area soils without direct adverse effects on extant water bodies.

Groundwater Hydrology: As in Alternative 2, if occasional high groundwater levels occur, water would be displaced from the physical locations of the septic tanks, however the locations of the

septic tanks are not within known or expected areas of high groundwater levels, therefore these impacts would not affect groundwater hydrology.

Water Quantity (Use): Under the temporary closure of the campground during rehabilitation of the wastewater treatment system and construction of new restrooms, there would continue to be a short-term decrease in water use. Replacement of existing facilities would be expected to affect long-term water use because potential changes in the number of fixtures would be modified to match existing use and would therefore not change the amount of water that flows through the system.

Water Quality: Constructing the new leachfields would result in a range of short-term adverse impacts on water quality from disturbance to area soils for grading, utility trenching, and construction. Replacing the leachfield and septic tanks would not increase the amount of impervious surfacing but would increase area compaction. These facilities would have small, undetectable effects on water infiltration from covering and compacting soil, which decreases permeability, soil moisture, and water storage capability. Long-term impacts could also include slower rates of subsurface water movement and increased runoff from hardened areas and/or increasing soil erosion where soils were exposed. The new leachfields would impact an area similar to, but smaller than, that used at the Rainbow Falls Trailhead, resulting in smaller overall impacts, and altering the location where subsurface filtration of wastewater would occur.

Long-term effects would also occur from operation and maintenance of the leachfields. Septic systems are designed to treat waste effectively when working properly. Operation of the leachfields would be anticipated to effectively dispose of waste, typically over a period of 30-50 years, as long as the tanks are maintained. With periodic pumping of the tanks, much of the waste would be taken to an offsite disposal facility. Wastewater would be held in the infiltrators and filtered through the soil, away from area water resources, such as the Middle Fork San Joaquin River. As required by law and policy, the public use/domestic well is located above the elevation of the leachfield approximately 400 feet from the leachfields, a distance that would preclude effects from them.

Impacts from Alternative 3

Hydrology and Floodplains

Impacts would be substantially the same as in Alternative 2. As in Alternative 2, a Floodplains Statement of Findings (FSOF) is required, under Executive Order 11988, to document the effects on and mitigation measures for retaining and reconstructing facilities in the floodplain. Under this alternative, relocating the day use comfort station to improve circulation would have a minor contribution to impacts in the 100-year floodplain. The new location of the comfort station would be at a slightly higher elevation, but it would continue to be within the 100-year floodplain. As a result, modifications would be made to the building to allow it to withstand the low-level flooding that is anticipated to occur in the area. Similarly, the vault toilets would be elevated, but would also be within the floodplain.

Replacing the leachfield, septic tanks, and day use and campground comfort stations, and constructing a new vault toilet in the campground would result in a small degree of additional impervious surfacing for building footprints and walkways to and around them (an addition of approximately 200-400 square feet, primarily related to the addition of new vault toilets, rather than the replacement of existing facilities). As in Alternative 2, there would be small, undetectable effects on runoff, subsurface compaction, and other effects from replacing these

facilities in their existing (campground comfort station) or a new (day use comfort station) location.

Groundwater Hydrology: As in Alternative 2, if occasional high groundwater levels occur, water would be displaced from the physical locations of the septic tanks, however the locations of the septic tanks are not within known or expected areas of high groundwater levels, therefore these impacts would not affect groundwater hydrology.

Water Use

Overall water use would either be reduced or remain the same with the replacement of the comfort stations. Current water use for toilets is approximately 6-8 gallons of water per flush. New water conservation fixtures could reduce this by up to 75 percent per flush. If possible, this decrease in water use per flush/faucet may allow additional fixtures to be provided, particularly in the day use comfort station, which is often overcrowded from pulse use because of shuttle arrivals and departures. Similarly, conversion to newer facilities may reduce electrical costs, including for pumping water from the well, a long-term beneficial effect. This would result in potential reduction of the water typically used (4,000-7,000 gallons per day) when both buildings are in use. Conversely, the proposed project could allow more fixtures because each would use less water. In that case, water usage would remain the same.

Water Quality

Impacts would be similar to Alternative 2. Reconstructing the campground comfort station in its current location and relocating the day use comfort station to improve circulation would have a small degree of effects, similar to Alternative 2, with slightly more ground disturbance causing potential changes in runoff due to the relocation of the day use comfort station and designating its current location as parking. These impacts would be reduced by the implementation of mitigation measures to rehabilitate the area following disturbance and ecological restoration of more sensitive areas currently used for parking near the river. Changes would reduce the potential for pollutants to move into the river during precipitation events, since the day use comfort station would be slightly elevated and approximately the same distance from the river, currently compacted areas used for parking would be decompacted and revegetated, and surface grading would redirect runoff.

Impacts from Alternative 4

Surface Hydrology and Floodplains: Impacts would be similar to Alternative 3, except that the day use comfort station would be reconstructed in its current location.

Groundwater Hydrology: As in Alternative 2, if occasional high groundwater levels occur, water would be displaced from the physical locations of the septic tanks, however the locations of the septic tanks are not within known or expected areas of high groundwater levels, therefore these impacts would not affect groundwater hydrology.

Water Use: Impacts would be the same as Alternative 3.

Water Quality: Impacts would be the same as Alternative 3, except that riverfront parking areas would not be ecologically restored due to the demand for parking.

Impacts from Reasonably Foreseeable Environmental Trends and Planned Actions

Visitor use and facilities in the park and project area contribute a range of cumulative adverse effects on water resources, including hydrology, water quantity, water quality and floodplains. Impacts are from development, including changes to area surfacing, use of water, release of sediment and pollutants, and construction of facilities within regulatory floodplains. Reasonably foreseeable future actions, including the Reds Meadow Road project and relocation of the maintenance facility would contribute additional localized and radiating adverse effects, including altering hydrology, changing runoff, and increasing areas covered by surfacing.

Although climatic changes have contributed to alterations in Sierra Nevada snowpack and stream dynamics, these changes have not yet had overall discernible effects on park resources (NPS 2016).

Because the actions in the action alternatives are small in scope and localized, overall impacts on park waters would not change from existing conditions. The range of these impacts is against a background of other human influences outside the park and non-human factors that also influence water resources, such as natural erosion of exposed soils.

Impact Avoidance, Minimization and Mitigation Strategies

To avoid, minimize or mitigate water quality impacts, the following strategies would be used during or following construction:

- Maintain fence and sign near the flood channel to discourage camping.
- Develop and implement a spill prevention and response plan and acquire supporting equipment to mitigate potential effects.
- Develop sediment control and prevention plans and implement best management practices for projects that could impact water quality.
- Conduct regular inspections of construction equipment and vehicles for leaks of petroleum and other chemicals to prevent water pollution.
- Locate staging areas well away from places where runoff could affect nearby water bodies.
- Minimize the amount of disturbed earth and the duration of soil exposure to rainfall where possible.
- Implement stormwater management measures to reduce nonpoint source pollution discharge from parking lots and other impervious surfaces using swales and revegetation of road and parking edges.
- Use swales, trenches, or drains to divert stormwater runoff away from disturbed areas during construction.
- Use temporary sediment control devices such as filter fabric fences, or sediment traps as needed during work near water.
- Wash heavy equipment and vehicles prior to use near water bodies.
- Use bio-lubricants (such as biodiesel and hydraulic fluid) in construction equipment.
- Conduct project activities near wetlands in a cautious manner to prevent damage from equipment, and related to compaction, erosion, siltation, etc. Apply protection measures during projects.
- Reduce and reuse wastewater.

Conclusion: Long-term adverse impacts would continue from operation of the current leachfield, until cessation of its use resulted in slow natural rehabilitation (without further inputs) of its impacts. There would be a variety of short-term adverse effects on water resources, including hydrology and water quality, during construction activities from implementation of the action alternatives (2-4). Because the overall disturbance area would remain the same (the day and overnight developed areas of the monument except for the new leachfield), effects on water resources would also be similar.

F. Vegetation

The monument lies within the California Floristic Province, which encompasses most of the state of California west of the drier Great Basin and desert regions. Conservation International has identified the province as a global biodiversity hotspot due to its high rates of endemism and the relatively threatened state of remaining habitats. The monument also lies within the Sierra Nevada ecoregion, as defined by the *Jepson Manual for Higher Plants of California* (Hickman 1993).

The monument's diverse topography and geology support several different plant communities. Species characteristic of both the wetter western and drier eastern slopes are present due, in part, to its proximity to the lowest pass in the Sierra Nevada.

Mixed conifer forest covers approximately 70 percent of the monument, composed primarily of red fir (*Abies magnifica*), white fir (*Abies concolor*), and lodgepole pine (*Pinus contorta* spp. *murrayana*). Jeffrey pine (*Pinus jeffreyi*) is moderately widespread in patches at lower elevations, while on higher north-facing slopes scattered mountain hemlock (*Tsuga mertensiana*) and western white pine (*Pinus monticola*) occur. Western juniper (*Juniperus occidentalis*) is present but uncommon, restricted to rocky, warm dry sites protected from fire (Keeler-Wolf et al. 2012).

The structure and composition of the coniferous forests in the monument have been strongly influenced by two major disturbance events in the past 25 years. These are the August 1992 Rainbow Fire, which burned approximately 84 percent of the monument, including many areas with high intensity and severity (Caprio et al. 2006; Caprio and Webster 2006), and the 2011 extreme wind event (Devils Windstorm) and forest blowdown (NPS 2017b) where, in some places, up to 80 percent of the trees fell. In the Rainbow Fire, about 25 percent of the monument burned with high severity. In these patches, lack of seed sources is restricting the regeneration of young trees.

The dominant mixed conifer forest gives way to a riparian zone along the Middle Fork of the San Joaquin River, and in other places to small meadows, seeps, and sag ponds, while shrublands dominate the southern end of the monument. Wetlands and riparian areas, many of which are scrub/shrub wetlands, comprise 7.5 percent of the monument, largely because of the influence of the San Joaquin River. The monument's wet meadows support very high biodiversity.

Broadleaved trees, including mountain alder (*Alnus incana*), black cottonwood (*Populus trichocarpa* ssp. *balsamifera*), and quaking aspen (*Populus tremuloides*), form approximately three percent of the monument while shrub-dominated ecosystems with whitethorn ceanothus (*Ceanothus cordulatus*), huckleberry oak (*Quercus vaccinifolia*), and manzanita (*Arctostaphylos* spp.) cover 17.5 percent.

Based on vascular plant inventories (Arnett and Haultain 2005; Arnett et al. 2014; Alphandary 2016; and Buhler 2018 in NPS 2018), there are approximately 390 vascular plant and 40 non-vascular plant species in the monument.

Vegetation in the proposed project area consists of mixed conifer forest dominated by lodgepole pine with sparse ground covering of low growing shrubs, forbs, and grasses.

Non-native Plant Species: Sixteen nonnative species are known to occur in the monument, of which three—bull thistle, woolly mullein, and cheatgrass—are considered invasive. None of these are in the proposed project area. The other nonnative species are not invasive at the monument. Within the project area, small populations or individuals of the following nonnative species have been observed and removed: pepperweed (*Lepidium virginicum*), red sandspurry (*Spergularia rubra*), and knot or pigweed (*Polygonum aviculare*). Based on treatment history over the past 15 years, annual assessments show a reduction in the spatial distribution and size of invasive and nonnative plant populations (Buhler 2018).

Sensitive Plant Species: Three sensitive plants listed by the California Native Plant Society, including Bolander's woodreed (*Cinna bolanderi*), short-leaved hulsea (*Hulsea brevifolia*) and cutleaf monkeyflower (*Mimulus laciniatus*) occur in the monument. Although short-leaved hulsea occurs adjacent to the project area, it would not be affected by the proposed project.

G. Impacts on Vegetation

Impacts from Alternative 1

There would continue to be small adverse effects on vegetation, primarily grasses and forbs, from management of the existing leach field. The existing septic system is failing, and saturated areas of effluent may also be adversely affecting existing vegetation from excess nutrient introduction and from potentially altering the kinds of vegetation that can grow.

Impacts from Alternative 2

The three areas where the septic tanks would be installed are in currently developed parking areas or roadways. One 12,000-gallon tank would be buried near each comfort station (in parking areas), and one 2,000-gallon tank would be buried in place of a manhole in the administrative area, behind the superintendent's office. Because they would be in existing parking areas or along a roadway, these septic tanks would have no impact on native vegetation habitats.

Vegetation in the proposed project area for the leachfield consists of mixed conifer forest with sparse ground covering of low growing shrubs, forbs, and grasses. Installing two leachfields in adjacent areas, each comprising about 18,000 square feet (0.42 acres each or 0.84 acre total) would affect this mixed conifer forest, primarily comprised of lodgepole pine and red fir. Although infiltrator lines would be designed in the field to avoid trees larger than 8-inches in diameter, installation would result in the loss of approximately 25 red fir and lodgepole pine trees 0.5-8 inches dbh. The largest trees in the leachfield are lodgepole pines and proposed methods to reduce impacts or damage to roots would reduce the potential for mortality from the installation. Because very few nonnative plants occur in the proposed project area and none of them are invasive, new disturbance as well as imported fill and staging areas have the potential to facilitate establishment of new plants/populations, a long-term adverse effect, however use of mitigation measures would prevent this.

Campground Vault Toilets: If the campground comfort station was later replaced with vault toilets, the vault toilet facility (2-4 unisex toilets) would cover approximately 180-360 square feet, with an additional 200-400 square feet of disturbance for site preparation and landscaping, including hard surfacing to provide accessible pathways from the campground. Because it would be constructed in the same location as the existing comfort station, there would be little or no disturbance of vegetation.

Impacts from Alternative 3

Impacts from the new leachfields would be the same as described in Alternative 2.

Day Use Comfort Station: Replacement/expansion of the current day use comfort station (520 square feet plus a separate accessible 375 square foot building) would require construction of a new building, including excavation for its foundation and footings (approximately 800 square feet, depending on the manufacturer and configuration), along with similar associated site preparation, walkways, and landscaping. These excavations would impact a sparsely vegetated area dominated by lodgepole pine, with very little understory vegetation due to parking and high levels of visitor use in the area.

The new day use comfort station would be connected to existing utilities, including power and water. Because of its new location, extensions of these utilities from their existing locations would require trenches 2-feet wide by 18-inches deep for the water line. The sewer line trench can include electrical conduit and would be approximately 2-feet wide by 30-36-inches deep. Because the day use comfort station septic tank would be farther away, there would be more trenching in this alternative than in Alternatives 2 or 4. Approximately 100 feet of trenching would be required. Where possible, these lines would follow existing trails and roads or areas of previous impact.

Campground Comfort Station: There would also be a smaller range of impacts from replacing the campground comfort station in its current location. These would include excavation for the foundation and footings for the new building, connections to existing utilities (electric power, water, and sewer lines). Since the comfort station would be replaced in its current location and would be similar in size (800 vs. 895 square feet) and utility connections would be closer, there would be a small degree of additional ground disturbance.

Peak Use Vault Toilet

Construction of a new vault toilet facility (2-4 unisex toilets) in the campground would have the same amount of disturbance for site preparation and landscaping as the existing vault toilets, including hard surfacing to provide accessible pathways. The vault toilet would be located within a disturbed area adjacent to an existing campsite, so minimal vegetation would be affected.

Impacts from Alternative 4

Except that the day use comfort station would be reconstructed in its same location, actions and impacts on vegetation would be the same as described in Alternative 3. Because the comfort station would be reconstructed in its existing location and be of similar size (800 vs. 895 square feet), there would be fewer impacts on vegetation, limited to that immediately surrounding the existing building. There would also be less trenching to reach the new septic tank location and less trenching because utility connections would be present.

Impacts from Reasonably Foreseeable Environmental Trends and Planned Actions

Human activities, including fire suppression, have altered the structure and composition of the forest and other area vegetation. In contrast to these broad cumulative changes, relatively small patches and corridors of habitat have been disturbed or lost from areas developed for roads, and visitor and administrative facilities.

Where concentrated visitor use has occurred, such as on popular trails, near the river, and in the campground and parking areas, there are social trails where loss of vegetation has occurred. Visitor use activities, such as camping, parking, fishing, and hiking may also contribute to vegetation loss. The loss and alteration of vegetation due to past land uses and ongoing management actions under the alternatives would continue.

Reasonably foreseeable adverse effects would also be contributed by the Reds Meadow Road reconstruction and rehabilitation project, including from widening of approximately eight miles of roadway. Other new development in the Inyo National Forest and the park as recommended in the GMP, could also result in localized impacts to vegetation, if implemented, although mitigation measures would reduce some adverse impacts.

Other restoration and development projects (e.g. addition of new visitor service facilities, restoration of roads or building sites, such as the maintenance facility) could also occur within the project vicinity. Actions could contribute both beneficial and adverse impacts to vegetation.

Impacts from the above actions, together with the impacts of the action alternatives, would continue to result in a small degree of long-term impacts to vegetation in the park from soil and vegetation loss, including from adding more surfacing and small facility improvements. The small range of adverse impacts described in the alternatives would not add appreciably to these impacts and would be offset by proposed restoration. Because most of the park continues to be undisturbed by human impacts, including within designated wilderness, the amount of area affected by present, and possible future projects is not substantial.

Impact Avoidance, Minimization and Mitigation Strategies

The following impact avoidance, minimization or mitigation measures would be used to reduce impacts on vegetation from implementation of the action alternative:

- Where possible, existing roads, trails and established pathways would be used to access construction areas.
- The size and number of staging areas would be minimized, and materials stored for long periods would be covered.
- The project construction areas would be narrowly defined to minimize disturbance outside building footprints.
- Construction limits would be clearly marked and delineated using fencing or other means.
- Revegetation plans would be developed for disturbed areas and would require the use of genetically appropriate native species. Revegetation plans would specify species to be used, seed/plant source, seed/plant mixes, site specific restoration conditions, soil preparation, erosion control, ongoing maintenance, monitoring requirements, etc. Salvaged vegetation would also be used to the greatest extent possible.

- Monitoring would occur to ensure that revegetation was successful, plantings were maintained, and unsuccessful plant materials were replaced (NPS 2009:71-72).
- Excavate and store approximately one inch of topsoil, separately from subsoil. Preserving this native soil and capping subsurface excavations would reduce the risk of invasive plant introduction, establishment and spread and facilitate native plant establishment.

Noxious Weeds

- The monument's invasive plant prevention, treatment and management plan focusing on prevention and rapid response would be implemented.
- Areas of concern for noxious weeds would be identified prior to construction.
- Soil disturbance would be minimized and re-seeding or revegetating disturbed areas would occur as soon as practicable.
- Construction equipment would be cleaned of mud and seed-bearing material and inspected prior to use in the monument, including recommending repeat cleaning at the contractor's expense, if needed.
- Noxious weeds in the project area or borrow materials used in the project would be treated prior to construction use.
- Fill materials imported from outside the park would be from approved sources and would be inspected and/or approved by NPS staff prior to importation into the park to avoid inadvertent importation of invasive species.
- Materials used in project work would be transported and stored so as not to acquire noxious weed seeds from adjacent areas.
- The project area would be monitored for three years post construction for undesirable plant species (exotics) and control strategies implemented if such species occur.
- Revegetation would use only native species, appropriate to the site.
- Completion of projects would include naturalizing disturbed areas by adding rocks, soil, or duff to areas without vegetation or needing restoration.

Conclusion: Vegetation impacts associated with the existing leachfield would continue under the no action alternative. There would be a small range of localized adverse effects on vegetation from implementation of the proposed project. Except for the new leachfields and the possible relocation of the day use comfort station in Alternative 3, much of the disturbance in the alternatives would be in areas currently disturbed by human activities. New disturbance to construct the leachfields would affect a relatively small area (approximately 12,000 square feet within an area of 32,000 square feet) located within a loop of the existing road.

H. Wildlife

Habitats at the monument support a variety of animal communities. These are enhanced by the close proximity of relatively low mountain passes—Mammoth Pass and Minaret Vista—that provide migration corridors between surrounding habitats. Approximately 170 vertebrate species are confirmed or expected to occur within the monument. These include 40 mammal species (including bats), 118 bird species, seven reptiles, two amphibians, and four fish (nonnative) (NPS 2017b).

Invertebrate inventories in the monument are approximately 15 percent complete. Thus far, surveys have recorded 94 taxa from the river (Schroeter and Harrington 1995 *in* NPS 2018), 29 taxa from flooded portions of meadows, and 77 terrestrial taxa from drier meadows (Holmquist and Schmidt-Gengenbach 2005 *in* NPS 2015).

Ten bat species, including three considered rare, were documented in 2001-2004 (Pierson and Rainey 2009 *in* NPS 2015). Another three species are likely but were not positively identified during the inventory. The most important regional threat to bats is habitat loss, but drought effects on emergent aquatic insect prey populations may also affect bats (NPS 2017b).

Approximately 118 bird species have been detected in several surveys (Heath 2007; Siegel and Wilkerson 2004; Steel et al. 2012a, 2012b *in* NPS 2018). Twenty bird species documented in or near the monument are listed on one or more sensitive species lists. Since 2011, species richness and density over time has been measured by the Sierra Nevada Network bird monitoring project. This and other surveys suggest species richness is well within the range of what would be expected for the habitat types and size of the monument (NPS 2017b).

Short-term bird monitoring (2002–2006) showed some species in decline and others increasing, with overall bird densities increasing over this same time frame (Heath 2007 *in* NPS 2018; Kuhn and Whitaker 2014). Regional Breeding Bird Surveys show more species declining. Seventeen declining species occur in the monument (Kuhn and Whitaker 2014).

I. Impacts on Wildlife

Impacts from Alternative 1

There would be no new impacts to wildlife. Existing low-level impacts, including from noise and disturbance during the busy visitor use season and ongoing maintenance activities, would continue. These long-standing effects would continue to contribute to localized adverse effects on the presence of wildlife within the area comprising the campground and day use area.

Overall, the presence of humans, human-related activities, and structures have removed or displaced some native wildlife habitat, particularly understory species, in the campground and day use area, which has altered the number and variety of wildlife occurring in the area during the primary visitor use season.

Without replacement of the leachfield, however, it is unlikely that the campground would be reopened, potentially reducing wildlife-human interactions and access to human food.

Impacts from Alternatives 2-4

New impacts to fish and wildlife species and habitat would primarily be from leachfield construction. As in Alternative 1, existing low-level impacts, such as periodic noise and disturbance from operation of mechanized equipment during maintenance as well as from routine human disturbance associated with visitor use would also continue.

Crepuscular and nocturnal species would continue to experience some adverse effects from seasonal 24-hour human occupation of the site. Under the action alternatives, overnight camping could resume pending replacement of the wastewater treatment system. Because of overnight camping and picnicking, wildlife may continue to have access to some human food

sources and could be subject to habituation. Most large and medium-sized mammals, however, would continue to avoid the area during the peak visitor use season. Species that would continue to be present could also be detected in the mornings, evenings, and/or at night by the presence of tracks or other evidence. Within the campground and adjacent to road corridors, wildlife species, such as birds, deer, black bears, and chipmunks, are likely habituated to human activity from decades of seasonal use, vehicles, and noise. Overall, the project area is somewhat noisy, especially during the visitor use season. Nonetheless, deer, small mammals, and numerous birds are routinely present.

Routine and recurring maintenance on the entrance and campground roads, such as grading, filling, ditch clearing, culvert cleaning, and other activities would continue and could cause periodic noise and human activity that would have short-term localized impacts on wildlife presence, disrupting animal movement, and temporarily displacing species from areas of activity. Due to the low level of traffic and low speeds, vehicle-wildlife collisions are uncommon.

Roads and developed areas could also continue to impede water and wildlife movement. Runoff could pick up pollutants and carry these toward the Upper Middle Fork San Joaquin River, potentially causing localized effects on water quality and aquatic species.

Leachfield Construction: There would be both temporary impacts (from noise and disturbance) and permanent impacts (from impacts to approximately 0.73 acres of mixed conifer forest) from construction of the leachfields. Long-term adverse effects (including tree and other surficial vegetation removal) would affect a smaller area of approximately 0.28 acres within this larger disturbance area, but would also affect the larger area. Temporary impacts to wildlife habitat would also occur from connecting the new leachfields to the existing comfort stations and new septic tanks. Although utility line installation would cause excavation impacts, over time these excavation areas could be revegetated following disturbance.

Permanent modifications at the site, including loss of wildlife habitat from tree removal and excavation, would adversely affect wildlife habitat, but would occur in an area currently affected by noise and disturbance from the roadway which curves around the site. In addition, the removal of small diameter trees would have very little impact on overall forest structure. Eventually, vegetation would return to the area and could remain, where it does not affect the functioning of the leachfield. Construction of the leachfields would result in temporary effects above ambient noise and disturbance, increasing effects on wildlife in the vicinity.

Construction-related noise would be temporary (lasting up to five months (June- October) during construction of the septic tanks, wastewater holding tank, and leachfields), and existing soundscape conditions, primarily from the roadway, would resume following construction activities. Because some of the proposed construction work would take place during the off-season and/or during campground closure, it may not provide the typical respite from human activity that normally occurs during the winter from cessation of most visitor use in the monument. As a result, some noise and activity could occur during a period that typically is quieter for area wildlife and therefore may have comparatively more effects than work conducted during the peak visitor use season.

Noise and disturbance impacts in the area would continue until the areas were restored or construction finished. Habitat modification due to vegetation removal would preclude short- and long-term return to the former level of use by some species of wildlife. For instance,

perching birds use trees and shrubs for roosting, nesting, and food foraging. Therefore, tree or shrub removal would have long-term localized effects from incremental loss of habitat that may have been used for perching, nesting, or procurement of food for a variety of species.

Depending on where it was located, staging of machinery and construction materials could also result in some impacts to wildlife habitat, causing some vegetation to be removed, trampled, or run over. There would also be loss of, or other adverse effects on, some species such as small mammals, amphibians and insects affected by soil disturbance and removal activities. Some wildlife habitat for these species would be changed or eliminated during construction.

Long-term effects on wildlife would also occur from operation and maintenance of the leachfields, such as from loss of some trees and shrubs.

Despite spill mitigation measures, potential impacts from inadvertent spills of fuel, oil, hydraulic fluid, antifreeze, or other chemicals could also occur. If they occurred, they would be cleaned up as soon as possible and the sites restored to clean conditions.

Additional Impacts from Alternative 3-4

With replacement of the day use and campground comfort stations in Alternatives 3 and 4, there would be additional noise and disturbance from demolishing the existing buildings and replacing them with structures with improved water conservation measures and accessibility. Impacts would also occur from connecting utilities and from creating accessible pathways to and walkways around the buildings. While these would be replaced in the same locations in Alternative 4, moving the day use comfort station in Alternative 3 would also have some impacts on a similar area where no building is currently present. Therefore Alternative 3 would result in long-term habitat modification as well as noise and disturbance. Alternative 3, however, could also result in rehabilitation of the current day use comfort station location, providing some long-term beneficial effects in a similar area and/or that area could be converted to day use parking and the restoration would then occur from reducing existing riverfront parking. For most wildlife, however, the overall disturbance of this vicinity from visitor use would continue to deter use and would continue to diminish overall habitat quality.

Alternatives 3 and 4 would also include vault toilet construction to better handle peak use periods. This construction would cause additional noise and disturbance and modification of a previously disturbed area for construction.

During site work for the replacement of the buildings, there would also be above-ambient noise and activity. Most noise would be from heavy equipment doing site preparation (excavating, constructing parking, digging foundations, and constructing concrete pads for the buildings) and finish work (interior modifications). As a result, the intermittent occurrence of most mammals would continue to be reduced during the day by this noise and activity. Other wildlife, such as birds, small mammals and insects would continue to occur but would be disturbed by project work and may be less evident. In the evening, at night, and on weekends when work would generally cease, wildlife use would be expected to return to normal in the project areas.

Impacts from Reasonably Foreseeable Environmental Trends and Planned Actions

See Federally Threatened and Endangered Wildlife section.

Impact Avoidance, Minimization and Mitigation Strategies

The following impact avoidance, minimization or mitigation measures would be used to reduce impacts on wildlife from implementation of the action alternative:

- Actions would employ techniques to reduce direct human impacts to wildlife, including visitor education programs, proper food storage, restrictions on visitor and park activities when warranted, development and use of best management practices for management activities (including construction), permit conditions, temporary and/or permanent closures of sensitive sites, and law enforcement patrols.
- Construction project managers would implement measures to reduce introduction of nonnative plants (see Vegetation section).
- Modifications to area habitat would protect and preserve critical habitat features, such as nest and granary trees and migration corridors, to the extent possible. In this project, the largest trees in the leachfield would be avoided during installation of infiltrator lines.
- Prior to removing trees in the proposed leachfields, survey of the trees would occur to ensure bird nesting activity has concluded.

Conclusion: There would continue to be a range of short- and long-term adverse effects on wildlife from retaining visitor use areas in the monument, including from ongoing evening and night activities under all alternatives. The proposed replacement of the wastewater treatment system (Alternatives 2-4) and the replacement of the comfort stations and construction of vault toilets (Alternatives 3-4) would result in a small degree of long-term modification of wildlife habitat, combined with a limited period of noise and disturbance during construction.

J. Federally Threatened and Endangered Wildlife

Six wildlife species and whitebark pine (*Pinus albicaulis*, proposed threatened) were on the threatened and endangered species list generated from the U.S. Fish and Wildlife Service (USFWS) for the project planning area under the Endangered Species Act (ESA). Whitebark pine does not occur in the project area and is of very limited occurrence in the monument. Four wildlife species [Sierra Nevada yellow-legged frog (*Rana sierrae*) (endangered), Owens tui chub (*Gila bicolor ssp. snyderi*) (endangered), monarch butterfly (*Danaus plexippus*) (candidate)] do not occur in the project area. Analysis for the other two [Yosemite toad (*Anaxyrus canorus*) (threatened) and Pacific fisher (*Pekania pacifica*)] is provided below.

Yosemite Toad (*Anaxyrus canorus*) (Description adapted from CDFW 2013 in NPS 2015)

There is one documented (2013) occurrence in the monument and Reds Meadow Valley of a Yosemite toad in the last 40 years, a species listed as threatened by the USFWS. As a result, the park has been conducting surveys to determine its distribution and presence elsewhere in the monument.

Endemic to the Sierra Nevada, adult Yosemite toads are 1.75 – 2.75 inches from snout to vent and are robust and stocky with dry, uniformly warty skin. Males are pale yellowish green or olive above, with few or no dark blotches while females and young are heavily blotched on a light background. The throat and belly are pale in both sexes and parotid glands are large, flat and oval. They eat insects, such as millipedes, beetles, flies, and ants. Juveniles may also eat tiny plants and detritus.

Typical habitat includes wet mountain meadows, willow thickets and the borders of forests, typically not more than 100 meters (984 feet) from permanent water, at elevations ranging from 4,800- 12,000 feet. Unlike many amphibians, Yosemite toads use nearby terrestrial meadow habitats for foraging, refuge, and movement, and they overwinter underground in mammal burrows, willow thickets, and under boulders and logs. Females may deposit over 1,000 eggs in one location, including in shallow pools and slow-moving meadow streams. Eggs hatch in 10-12 days, with tadpoles metamorphosing in about two months. During their early life, the toads are vulnerable to predation by fish, other frogs, diving beetles and garter snakes.

The Yosemite toad was once one of the most common high-elevation Sierra amphibians. Active for only four to five months per year, it has just a short time in which to reproduce and eat enough to survive the long season of hibernation under the snow. The number of Yosemite toads has now declined precipitously throughout the Sierra Nevada, particularly in Yosemite National Park, where the toad was first discovered and named.

The causes of the decline are unclear. Disease, degradation of habitat by grazing livestock, increased ultraviolet radiation, introduced predatory fishes, a severe 1980s drought, windborne pesticide contamination, and increased predation by common ravens, whose population has increased greatly due to human activities, are all likely contributors to the decline. After entire populations of Yosemite toads disappeared, the Yosemite toad was listed as threatened.

According to the USFWS, Yosemite toads move by walking, rather than hopping and are inactive in cold temperatures and hot, dry weather. They are primarily active during the day and frequent sunny open sites. Emerging from underground soon after snow melt, they are most active above ground for only about four months each year, during the period from April-October (Stebbins 1985 in USFWS https://www.fws.gov/nevada/protected_species/amphibians/species/yosemtie_toad.html accessed 6-29-20) (sic).

Pacific fisher (*Pekania pacifica*): The Pacific fisher is the only other species listed or proposed for listing by the USFWS (West Coast Distinct Population Segment [DPS], USFWS, November 7, 2019) with potential suitable habitat in the monument. Its listing was effective June 15, 2020.

The Pacific fisher was listed on June 15, 2020 as endangered under the ESA. In the southern Sierra Nevada (SSN), fisher populations are affected by the Sierra tree mortality event which is affecting many of the key components of fisher habitat such as complex forest canopy structure and connected closed-canopy forest conditions (USFWS 2019).

Potential denning and foraging habitat are based on 2020 Conservation Biology Institute (CBI) Southern Sierra Nevada Post-Drought Fisher Denning Habitat Suitability and Post-Drought Fisher Landscape-Scale Habitat Suitability models (in Kuhn and Whitaker 2014). Suitable fisher habitat at Devils Postpile National Monument follows the suitability models from CBI mentioned above with the following occupancy thresholds; modeled potential foraging habitat with post-drought habitat suitability model at a probability of 0.27 or greater as suitable foraging habitat represents approximately 200 acres of the monument. No fishers have been documented in the park, and NPS or Inyo National Forest wildlife biologists are unaware of any reported fisher observations from areas surrounding the park.

K. Impacts on Federally Threatened and Endangered Wildlife

Impacts from Alternative 1

Ongoing visitor and administrative activities in the developed area of the monument and continued use of the USFS-located leachfield would continue to be avoid effects on the Yosemite toad and Pacific fisher. There is no documentation of Pacific fisher from the monument and only a single observation of Yosemite toad. No observations are documented in the Reds Meadow Valley including the Rainbow Falls Trailhead area.

A single observation of a Yosemite toad in the park confirmed their presence in late June 2013 (a drought year) on a warm sunny day near the left bank of the San Joaquin River and the campground. None have been documented since, despite annual surveys in the early, mid- and late season in suitable habitat, particularly in a small wetland near the campground, therefore it is unlikely that there would be impacts to Yosemite toads.

No fisher surveys have been conducted in the action area, however wildlife observations for the past 20 years within a 5-mile radius of the action area have not documented fisher. Sierra Nevada Inventory and Monitoring Program and Inyo National Forest wildlife biologists are unaware of any historic or contemporary observations of fisher in the vicinity of the park.

Impacts from Alternatives 2-4

Impacts on Yosemite Toad: No impacts are anticipated from proposed actions. Except for leachfield construction, most actions would take place in natural, but previously disturbed non-habitat areas. Leachfield construction would occur in mixed coniferous forest adjacent to the road. One loop of the roadway encloses the area (Figure 4).

A small ephemeral drainage below the proposed leachfield area does not meet habitat requirements for Yosemite toads because it does not retain ponded water and water is only present during snowmelt or periods of heavy precipitation. Nonetheless, the area is within the approximate distance from the San Joaquin River (about 1,000 feet) from where the single Yosemite toad was observed. There would also be no specific impacts to this drainage because it would be avoided during access to the project area.

Elsewhere in the project area, replacement of the campground comfort station would be within the approximate distance that Yosemite toads have been found from perennial water sources (about 1,000 feet), however toads are unlikely to be found near riverine environments such as the San Joaquin River. Instead, they prefer slower-moving waters. Although Yosemite toads could potentially be within this distance from the area of disturbance, given the repeated searches for them over the years throughout the developed area during the snow free season in potential suitable habitat, especially during precipitation events. Because the proposed project areas are also close to or within the existing heavily used campground, roadway, and administrative area, the presence of toads is unlikely. Nonetheless, specific surveys would be conducted for the toads as the area melts out in the spring and continuing into this summer and fall, and monitoring during proposed excavation would also be conducted. If any Yosemite toads or other sensitive amphibians are found, work would be halted and the USFWS consulted.

The upland (non-meadow) and undisturbed areas (e.g. proposed leachfield location) of the project area could provide dispersal or over-wintering habitat for toads. The longest known

overland movement by a Yosemite toad is 0.78 miles, recorded on the Sierra National Forest by Liang (2010). In this analysis, potential dispersal/overwintering habitat is assumed to be any upland area within 0.78 miles of an occupied breeding meadow, which also contains rodent burrows or forest litter sufficient to provide protection for toads. No occupied breeding meadows exist within 0.78 miles of the project boundaries.

Impacts on Pacific Fisher: The proposed project area is limited to the developed area and may have an indirect effect on fisher by causing short-term noise disturbance. Tree removal for the proposed leachfields would reduce the density of smaller diameter trees on approximately 0.75 acre. Reduction in understory vegetation may also decrease potential foraging habitat quality. Reduction in understory and ladder fuels could increase fisher exposure to predation and decrease habitat quality for prey, while opening up forest stands and introducing more vegetation edges in and between stands may increase access by fisher predators, such as mountain lions, bobcats, and coyotes. The proposed location for the leachfields, however, occupies a very small area and that section of forest has been modified through regular hazard tree removal to ensure safety in the adjacent administrative areas and road. Therefore, there would be fewer trees and a more limited understory than under existing conditions.

Impacts from Reasonably Foreseeable Environmental Trends and Planned Actions

Yosemite toads and Pacific fishers are among a wide array of species that have declined precipitously over their former ranges and are now listed as threatened (toad) or endangered (fisher) under the ESA.

The effects of development in the park and in the surrounding area, coupled with the purposeful eradication of many predator species during the 1800s and early 1900s, have contributed to low level or extirpated wildlife populations of some key species in the park. In addition, loss of habitat from logging in the Sierra Nevada has changed wildlife presence and abundance, as has rural, urban, and suburban development and road development.

Although there are no major development projects planned for the park that would result in additional substantial effects on wildlife, the combined effects of existing development and projects outside the park continue to take a toll on wildlife from noise and disturbance and from occasional wildlife-human interactions. The existence and maintenance of the road and park developed areas would continue to contribute to long-term adverse effects on wildlife, increasing the presence of some species while decreasing the presence of others.

Yosemite toads have declined throughout their range and the causes of this decline are not known. Yosemite toads breed in shallow, ephemeral waters which place eggs and tadpoles at risk of freezing and desiccation and mortality appears to be naturally high in some years. Thus, factors that reduce the availability and retention of water at breeding sites pose particular risk to the species' reproductive success. USFWS (2014) considered recreation effects, road and timber harvest effects, and dams and diversions to be low magnitude threats.

According to the USFWS (2019):

The major threats for the SSN [Southern Sierra Nevada] subpopulation [of Pacific fisher] are loss and fragmentation of habitat resulting from high-severity wildfire and wildfire suppression activities, vegetation management, and forest insects and tree diseases, as well as direct impacts that include high mortality rates from predation, exposure to toxicants,

and potential effects associated with small population size. Tree mortality may be an additional threat on this subpopulation given the species' needs, but more information is necessary to determine population-level impacts. Potential conservation measures include the development of the Southern Sierra Nevada Fisher Conservation Strategy (Spencer et al. 2016, entire).

Reasonably foreseeable future actions, within and outside the park would also continue to contribute adverse impacts on wildlife. These would be combined with some beneficial effects, from native plant restoration and potential reductions in development infrastructure. Proposed rehabilitation and reconstruction of the Reds Meadow Road would contribute persistent noise and disturbance for several years. Other impacts, such as relocating the maintenance headquarters would be localized, but not long-term, while recreational use would continue to contribute low level but persistent impacts. Therefore, wildlife habitat, species composition, and presence in the vicinity of the proposed project areas would continue to be altered by human activity. Although changes in climactic conditions have occurred, especially associated with snowpack and river dynamics, no specific discernible effects have affected wildlife presence in the park.

Impact Avoidance, Minimization and Mitigation Strategies

- Facilities/actions/operations have been located and designed to avoid or minimize impacts on special status species habitat
- Mitigation actions would occur during normal park operations as well as before, during, and after projects to minimize immediate and long-term impacts on rare, threatened, and endangered species. These actions would vary by project area, and additional mitigation measures may be added depending on the action and location. Many of the measures listed for vegetation, wildlife, and water resources would also benefit species that are rare, threatened, endangered and/or of management concern by helping to preserve or minimize impacts on habitat.

Yosemite Toad Measures

- Surveys for toads in potential breeding habitat within and adjacent to the project area would be conducted prior to any project work.
- Wetland areas that have habitat elements for the Yosemite toad would be avoided and in the unlikely event that disturbance was to occur, surveys for Yosemite toads would be completed. If a toad is detected, work would be deferred until they were no longer present, depending on recommendations from the USFWS.
- Any open trenches or holes in the project area would be covered when project work was not in process to avoid entrapment of wildlife.

Fisher Measures

- Although it is highly unlikely that a fisher would be denning or observed within the monument, work crews would be taught how to identify fisher and notify the park wildlife biologist if a fisher is seen. If a fisher is spotted within the area where work is occurring, work would cease until the animal moves on naturally.
- Food and anthropogenic garbage would be stored in park-approved containers so fishers cannot obtain it.
- Ensure construction fencing allows for the safe passage of fishers and does not cause entrapment.

Conclusion: Actions under Alternative 1 may affect, but would be unlikely to adversely affect, Yosemite toads and Pacific fisher.

Because Yosemite toads are extremely rare and because mitigation measures would be used to avoid them, the project under the alternatives (2-4) may affect, but is unlikely to adversely affect, Yosemite toads. This determination of effect is the same one that the USFWS concurred with for the park's Fire Management Plan, which had parkwide impacts. If there are changes in this determination of effect based on additional work in the project area, additional consultation with the USFWS would be initiated.

Because fishers are not documented to be present (see *Impacts from Alternative 1*), and because actions would take place in their potential foraging habitat and cause habitat modifications, noise and disturbance, actions in alternatives 2-4 may affect, but would be unlikely to adversely affect Pacific fishers.

L. Archeological Resources and Historic Structures

Overview: The Area of Potential Effects (APE) is defined as the developed area of the park, including the day use area, campground, and administrative use areas and has been described in correspondence with the California State Historic Preservation Office (SHPO) and area Native American Indian tribes.

The monument encompasses a diverse landscape of natural and cultural features reflecting the varied activities of Native Americans, miners, sheepherders, conservationists, scientists, park managers, local residents, tourists, and others. Erosion, vegetation, wildlife, wildfire, volcanic activity, and harsh winters may have affected much of the evidence of the region's past, yet some prehistoric and historic archeological sites, objects, trails, and places remain. Following the 1992 Rainbow Fire, which burned approximately 84 percent of the monument, the land within it was systematically surveyed.

Archeological Resources: Archeological evidence suggests that people have been present in Devils Postpile and surrounding area up to 7,500 years ago. Obsidian found within the monument suggests that the valley was used seasonally by tribes crossing the Sierra Crest west of the present-day Town of Mammoth Lakes and was probably part of a trade route from the Casa Diablo geothermal area, where the obsidian originated (NPS 2017a in NPS 2018).

Early explorers and visitors likely impacted known sites throughout the valley, especially in the vicinity of high public use areas such as campsites, roads and trails. Human effects on natural processes, including on river channel erosion, tree mortality/fall, and fire effects, have also likely affected archeological sites. Road and facility construction likely also resulted in adverse impacts on cultural resources, including archeological and historic resources.

Some historic resources, such as the Postpile cabin (described further in the next section), were adversely affected by weather and neglect and from modifications made prior to understanding their significance.

During the post-Rainbow Fire survey, 12 prehistoric and historic sites, including cabin remains, trash scatters, tree blazes, prehistoric and historic trail routes, gathering and hunting areas, and lithic artifacts, were found. None are in the proposed project area. Two condition assessments (in 2007 and 2013) examined the monument's archeological resources. The 2011 windstorm affected some trees with blazes, while other sites have been affected by illegal campfires, fires from improper cigarette disposal, and improper refuse disposal.

Historic Structures: The historic Visitor Contact/Ranger Station and remains of the Postpile Cabin are listed in the National Register of Historic Places. The Ranger Cabin (1941) was constructed with lumber salvaged from the former Sentinel Hotel in Yosemite Valley, replacing a temporary tent shelter that had served as the Visitor Contact/Ranger Station beginning in the mid-1930s. This building is still the primary contact site for visitors. Despite small changes in materials and workmanship, the ranger cabin maintains its connection to the early period of NPS planning and development at Devils Postpile as its first administrative and oldest extant building.

The Devils Postpile Cabin site is an archeological and historic resource representing early mining history. Also known as Postpile Joe's Cabin, after Joseph Ivanhoe (a one-armed mule packer), the cabin collapsed from heavy snows in 1964, but the original chimney and hearth of the 1870s cabin remain. The Devils Postpile Cabin site was listed in the National Register of Historic Places in 2016 due to its association with events that have made a significant contribution to the broad patterns of history, and because the property has yielded, or is likely to yield, additional important information.

Potential impacts on resources listed or eligible for listing in the National Register of Historic Places (NRHP) were identified and evaluated (Avery 2020). For the proposed project, the campground and day use Mission 66 comfort stations and campground/day use developed area were evaluated for their potential historical significance. Although much information was gained in the search, the facilities were found ineligible for listing on the National Register of Historic Places. The comfort stations were declared individually ineligible by SHPO on April 18, 2019 (Reference # NPS_2019_0304_001) and the SHPO concurred with the ineligibility of the campground/day use area and other portions of the monument's eligibility associated with Mission 66 on September 2, 2020 (Reference # NPS_2020_0821_00):

With the exception of the ranger cabin, built in 1941 and already listed in the National Register of Historic Places (National Register), none of the documented resources of the Developed Area are eligible for the National Register, nor is the Developed Area eligible for the National Register; it does not meet registration requirements or retain integrity to the Mission 66 era or other historic period (California Department of Parks and Recreation Office of Historic Preservation (SHPO) 2020).

M. Impacts on Archeological Resources and Historic Structures

Archeological Resources

Impacts from Alternative 1

There would be no effect on the Devils Postpile Cabin archeological site, or other known archeological resources, or on their eligibility for the National Register.

Most of the developed area is heavily disturbed due to seasonally high day and campground use. Ground visibility is good due to the coarse pumice soils and the sparsely vegetated understory of areas with trees. The meadow adjacent to the Upper Middle Fork San Joaquin River is heavily vegetated but has also been the subject of intense survey, especially post-fire.

Impacts from Alternative 2

As in Alternative 1, there would be no effect on the Devils Postpile Cabin archeological site, or other known archeological resources, or on their eligibility for the National Register.

Surveys for archeological resources in the vicinity of the proposed actions occurred in 1992 following the Rainbow Fire. That survey included the areas where soil percolation testing and utility location excavation is proposed. The survey (Hull and Hale 1993) identified nine prehistoric archeological sites (four were originally documented as loci of one site). Portions of the monument were also surveyed in 2013 following a wind event. None of the archeological sites are within the area that would be affected by this project. There are no known archeological sites that would be affected by proposed actions to relocate the septic system leachfields.

Impacts from Alternative 3

Impacts would be similar to Alternative 2. As in Alternative 2, areas where proposed modifications would be carried out have been surveyed for archeological resources and additional subsurface surveys would be performed, if warranted, prior to taking specific actions. As a result, implementation would be modified to the extent feasible to avoid potential sites. No known archeological sites would be affected by the proposal to relocate the day use comfort station, or to reconstruct the campground comfort station, or to add new vault toilets in the campground area. Proposed mitigation measures would employ best management practices to prevent unknown resources or sites from being adversely affected.

Impacts from Alternative 4

Impacts would be similar to Alternative 3. There would be no known archeological resources affected by the proposed action to reconstruct day and campground comfort stations and vault toilets and the same mitigation measures would be employed.

Historic Structures

Impacts from Alternative 1

There are no historic resources within or adjacent to the current leachfield or that area affected by ongoing operations. There would be no effect on historic resources from implementation of Alternative 1.

Impacts from Alternative 2

There are no historic resources in the area that would be affected by Alternative 2. The historic visitor contact/ranger station and Postpile Joe Cabin ruins and other historic structures listed on or eligible for the National Register are outside of the project area for installation of the septic tanks, leachfields, and potential conversion of the campground comfort station to vault toilets.

Impacts from Alternative 3

There would be no effect on historic resources from maintaining the campground comfort station in its current location, or from constructing new vault toilets to serve peak season use.

Although constructing the day use comfort station closer to the Visitor Contact/Ranger Station has the potential to affect the setting of the building since the new building would be fairly close to it (55 feet away), designing the structure with architectural elements compatible with the Visitor Contact/Ranger Station would reduce potential effects. Other elements associated with the significance of the historic Ranger Station, including location, design, workmanship, and association would be the same and would be unaffected by proposed actions. In addition, designing the new structure in consultation with the SHPO would minimize the potential for adverse effects that might affect the listed status of the historic ranger station for the National Register.

Impacts from Alternative 4

There would be no effect on historic structures, including the Visitor Contact/Ranger Station from retaining the day use comfort station in its current location. As in Alternative 3, there would also be no effect on historic structures from maintaining the campground comfort station in its current location or from constructing new peak season vault toilets.

Impacts from Reasonably Foreseeable Environmental Trends and Planned Actions

Archeological resources in Devils Postpile National Monument have been impacted to varying degrees from cumulative construction-related disturbances (prior to the advent of archeological resources protection laws); visitor impacts and vandalism; and erosion and other natural processes.

Reasonably foreseeable actions, such as construction of a joint maintenance facility outside the monument, implementation of GMP recommendations, reconstruction and rehabilitation of the Reds Meadow Road, and other actions by the USFS have the potential to affect known and unknown archeological resources, depending on the implementation of mitigation measures.

Impact Avoidance, Minimization and Mitigation Strategies

To avoid, minimize or mitigate impacts to cultural resources, including archeological resources and historic structures, the following strategies would be used:

- Archeological surveys would precede any ground disturbance and actions would be modified, if needed to avoid disturbance.
- All project-related ground-disturbing activities would be monitored with oversight by a professional archaeologist qualified under the Secretary of the Interior's Standards.
- The archeologist would, at a minimum, hand screen a sample of soil from each bore hole, and from three locations over the length of the trench at varying depths. Screening more samples would be at the professional discretion of the archeologist.
- The monument would manage projects to avoid adverse impacts to properties determined eligible for listing or listed in the National Register of Historic Places. If adverse impacts cannot be avoided, mitigation measures would be developed in consultation with SHPO, tribes, and other consulting parties pursuant to 36 CFR Part 800, the implementing regulations for the National Historic Preservation Act.
- Consultation with tribes and groups regarding monument undertakings with the potential to affect resources of cultural and religious significance would ensure tribal perspectives are understood, and adverse effects are avoided or minimized.
- Tribal monitoring requirements would be identified during consultation.

- In compliance with NAGPRA, the NPS would also notify and consult concerned tribal representatives for the proper treatment of human remains, funerary, and sacred objects should these be discovered during the project.
- Should unknown archeological resources be uncovered during construction, work would be halted in the discovery area, a cultural resources specialist contacted, the site secured, and an Inadvertent Discovery Plan implemented, including consult with SHPO and tribal entities according to 36 CFR 800.11, and, as appropriate, implementing provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990.
- If necessary or possible, relocation of the work to a non-sensitive area would occur to enable more site testing and documentation. Every effort would be made to avoid further disturbance to the site. If relocation could not occur, then mitigation would include documentation of the site to appropriate standards based on consultation with the State Historic Preservation Officer and other experts as applicable.

Conclusion: There would be no adverse effect on known archeological or historic resources from implementation of the action alternatives. Proposed actions (Alternatives 2-4) would either avoid impacting these resources (archeological resources) or would be modified in their proposed implementation to avoid impacting the characteristics that make these resources listed in or eligible for the National Register (historic resources).

N. Visitor Experience

Monument facilities, infrastructure, and visitor use are concentrated in the 14 percent of the monument that is non-Wilderness (Kuhn and Whitaker 2014:28). Visitation averages approximately 135,000 people per year and has increased substantially over the years. The average length of stay is 4-5 hours for day use and 2.5 days for overnight use (when the campground is open). Visitation to the Reds Meadow Valley continues to grow with extensive marketing by the Town of Mammoth Lakes.

Access and Transportation

Private vehicle use is regulated in the peak summer season when a mandatory shuttle service brings visitors to the monument and when parking capacity is exceeded during the fall season. The monument provides access for Pacific Crest Trail and John Muir Trail hikers (about 6,000 each summer) and other backpackers. Equestrian commercial day trips from the Reds Meadow Resort and Pack Station to Rainbow Falls average 1,500 visitors. In autumn, after the shuttle season has ended, a weekend parking shuttle improves access to the monument from other parking areas in the valley.

When the mandatory shuttle ceases operations, demand for the monument's 65-space parking lot can be exceeded by three to seven times the available spaces, compromising visitor safety and enjoyment. On busy days, parking may be managed by park staff and the closed campground is utilized for additional parking. The access road into the monument is frequently closed when parking areas are full and visitors park in the Inyo National Forest overnight hiker parking lot (capacity 25-30 vehicles depending on size) which is connected to the monument's Visitor Contact/Ranger station and trail system by a half-mile trail. After the main parking area fills, visitors start parking along Reds Meadow Road, at the Rainbow Falls Trailhead, and Reds Meadow Resort and Pack Station. Visitors also park in unsuitable areas on vegetation, in

designated accessible spaces, and along the narrow road shoulders. Based on the GMP (NPS 2015) there are no feasible locations for creating additional parking lots. In addition, development of additional parking was not supported by the public during the GMP planning process.

To access the day use comfort station, visitors must walk along or across the access road to the riverfront parking which leads to pedestrian/vehicle conflicts and congestion. Visitors often have difficulty in finding the comfort station after being dropped off at the mandatory shuttle bus stop or after parking their vehicle.

Visitor Use Opportunities/Interpretation and Education

Hiking to Devils Postpile/Rainbow Falls: Most day use visitors hike to Devils Postpile and/or Rainbow Falls. En route, they may picnic, visit the Visitor Contact/Ranger Station, interact with park staff, and/or enjoy access to the San Joaquin River.

Fishing/River Access: The Upper Middle Fork San Joaquin River flows adjacent to the campground. Alongside the river, a small trail provides access to overlooks and fishing. To access this trail, visitors must walk through the riverfront parking area and the start of the trail is frequently blocked by parked vehicles.

Picnicking: There are approximately 10 picnic tables (including two accessible sites) in the monument. When the campground is closed, picnicking is also an available visitor experience in B Loop.

Obtaining Information/Publications from the Historic Ranger Station: The Visitor Contact/Ranger Station is open during shuttle operations and offers an opportunity to interact with park staff and to obtain or purchase publications with monument information and other sales items, including convenience items for visitors such as sunscreen, insect repellent, and water bottles.

Interacting with Park Staff: Suspension of campground operations has temporarily provided visitors more access to park staff and additional opportunities for day-use visitors to experience parts of the riverfront for fishing and picnicking, and nature observation.

Camping: When the campground is open, visitors have enjoyed camping in the monument. The campground has 20 sites and can accommodate up to six people per site; most campsites typically host from 1-2 people per night. It is typically full on weekends, but often has spaces available during the week. Camping is also available outside the monument in nearby USFS-managed campgrounds. There are more than 100 other campsites in the Reds Meadow Valley, though the monument's campground is the only one with a designated accessible site that is partially compliant with ADA which also has limited access adjacent to the San Joaquin River.

The park provides basic interpretive services. When the campground is open, staff resources are often directed toward campground management, limiting the ability to maintain or expand interpretive and educational programming. Although there is an amphitheater, traditional campground interpretive opportunities such as evening programs have not been offered since 2014. The amphitheater does provide opportunities for presentations to educational groups and interpretive talks as staffing allows.

Through-hikers on the Pacific Crest Trail and John Muir Trail are currently allowed to use the campground for one night with a valid permit whether it is closed or open. When the campground is operational and fees are charged, through hikers are required to pay for use. When the campground is not open to public use, providing a single night of camping within the campground decreases the risk of escaped wildfire and resource damage in the monument's wilderness where no camping is allowed.

Backcountry Skiing/Snowshoeing: In winter, the road is closed, and access is via backcountry skiing or snowshoeing, with illegal motorized access sometimes occurring.

O. Impacts on Visitor Experience

Impacts from Alternative 1

In the short-term, operation of the failing leachfield would continue until the permit from Madera County was withdrawn. In the long-term, without the ability to treat wastewater from the visitor and administrative facilities in the monument, current facilities could be removed or replaced with temporary facilities, including portable restrooms, showers and an aboveground wastewater tank. Because the park would be unable to provide water for the employee facility, housing and visitor comfort stations, these facilities would be unusable. That would result in the long-term need for temporary portable toilets or the construction of vault toilets to serve day and overnight visitors and employees.

Placement of temporary portable facilities would replace existing serviceable buildings (day use and campground comfort stations and administrative housing and employee facilities). This would likely result in an extended period of temporary facilities, which would adversely affect the experience of some visitors.

Because of the difficulty in recruiting and retaining employees, there could be fewer NPS staff to provide information, interpretation and other visitor services. This would adversely affect the experience of some visitors accustomed to services provided by the NPS.

Impacts from Alternative 2

Access and Transportation

There could be short-term adverse impacts on visitor access and transportation, depending on when the project started, for instance if it began in the fall, prior to monument closure. Visitors could be affected as the project started up and continued. Alternatively, the project could begin after spring snowmelt (test drilling) and continue throughout the summer and fall (construction). During construction, there may be detours affecting visitor parking areas and access to restrooms while septic tank locations are being dug. There could also be short road delays during installation of the leachfield or during moving of heavy equipment.

To access the day use comfort station, visitors would continue to have to walk along or across the access road to the riverfront parking, leading to pedestrian/vehicle conflicts and congestion. Visitors would continue to have difficulty in finding the comfort station after being dropped off at the mandatory shuttle bus stop or parking their vehicle.

Even with replacement of the wastewater treatment system, the existing comfort stations would continue to be closed periodically for repairs. The buildings and associated pipes are more than

50 years old and their plumbing frequently clogs or leaks. At least once a month, a toilet needs to be closed for a few days for repair. There would also continue to be long waits to use the comfort stations. On busy weekends the line can be 10 minutes or more (especially for the women's restroom).

The buildings would also continue to be difficult for those with mobility impairments to access, since they were not designed to be accessible and the stalls are small, with the doors closing inwards. As a result, the stalls are too small for people with mobility impairments to use and awkward for everyone else. Although there are accessible vault toilets within the monument and an accessible single stall restroom adjacent to both comfort stations, they may also have long wait times.

Long-term: There would be no new impacts on access and transportation associated with the monument. The capacity of visitor parking areas would remain approximately the same (65 spaces and 15 overflow spaces in the campground). As visitation continues to increase, however, some visitors may find that they cannot get a seat on the shuttle and may have to reschedule their visit for another time or day. Even now, extensive parking congestion occurs after Labor Day when the mandatory shuttle operations cease. Often, the current parking capacity cannot accommodate fall shoulder season visitors. On average, during this time, more than 300 vehicles arrive daily. Based on visitor use statistics, the Labor Day weekend is often the busiest time.

Visitor Use Opportunities

Short-term: Although visitors could continue to hike, picnic, fish, and enjoy other activities at the monument, overnight camping would continue to be closed through the project to replace the water treatment system. Potential overnight visitors would continue to be inconvenienced for several years by ongoing campground closures, resulting from heavy snow years and infrastructure improvements. With the planned rehabilitation of the Reds Meadow Road outside the park, there would be additional or continued closures.

Without campground operations, initially, there would be more opportunities for park staff to interact with visitors for orientation, information, and interpretation/education. Later, with the campground open again, staff time would be used more for managing the facility for overnight visitors, resulting in reduced staff time availability for day use visitor programming and management. Depending on visitor use and administrative needs, there would likely be short-term reliance on portable and existing vault toilets, until the new septic system is operational.

Long-term: Overnight camping would resume, and other activities would continue. Some existing adverse effects, such as parking congestion during the shoulder seasons in undesignated areas, would continue. This congestion could limit the ability of emergency vehicles to respond to incidents and could also continue to contribute to an overall feeling of crowding. Existing day use crowding would continue. The monument's limited day-use facilities do not meet the demands of the 135,000 annual visitors. The day use area is congested because the campground and parking occupy much of the usable space. Safety-related incidents and user conflicts throughout the monument, including in the campground, could also increase if staffing continues to decline and visitation continues to increase.

Impacts from Alternative 3

Access and Transportation

Actions would be the same as in Alternative 2 for replacement of the wastewater treatment system (septic tanks and leachfield). In addition, eventual relocation of the day use restrooms would provide clarity for arriving visitors and reduce safety considerations from large numbers of visitors having to cross the road to use the facility. Relocation would improve conditions for visitor drop-off/bus access by decreasing pedestrian/vehicle conflicts and reduce the difficulty in visitors locating the facility. Relocation could allow for restoring the 15 spaces closest to the river in the Riverfront Parking area, or these spaces could be retained to maintain the existing level of parking. Restoration of this area would provide visitors easy access to the river trail that is currently blocked by parked vehicles. Utilizing the footprint of the existing comfort station would provide an additional approximately 6-8 parking spaces. When the new vault toilets are constructed, the combination of new comfort stations and new vault toilets would reduce lines and delays in using the comfort stations and would improve access to facilities in good condition for all visitors, especially those with mobility impairments.

Replacing the existing day use and campground comfort stations would also reduce maintenance associated with the existing buildings, including improving their capacity to handle the heavy snow in the monument. The nearly flat roofs of the current comfort stations often threaten them with collapse during the winter in high snow years.

Visitor Use Opportunities

Impacts would be similar to Alternative 2, however with replacement of the comfort stations (with a similar facility in the day use area, and additional vault toilets and a new comfort station in the campground) would generally allow for the existing facilities to remain open until the replacement has begun, however the interim use of portable toilets could be prolonged, depending on when the project starts and ends.

Impacts from Alternative 4

Access and Transportation

Impacts would be the same as in Alternative 3, except that because the day use comfort station would not be relocated, there would continue to be congestion in the vicinity of the shuttle drop-off and day use comfort station for visitors trying to access the restroom by crossing the sometimes busy roadway. Opportunities for removing and restoring riverfront parking would be reduced and pedestrian access to the river trail would be the same as Alternative 2.

Visitor Use Opportunities

Visitor use opportunities would be the same as in Alternative 3.

Impacts from Reasonably Foreseeable Environmental Trends and Planned Actions

The Reds Meadow Road rehabilitation project may cause interruptions in park visitor use and/or shuttle service and therefore visitor access and transportation to and from the monument. These actions would inconvenience day use visitors, some of whom would avoid the park due to the congestion and other impacts of road rehabilitation and construction. Using the campground for parking during the shoulder seasons and while it is closed would continue to allow for many more vehicles to park, with fewer vehicles being turned away.

Devils Postpile has provided a range of visitor use opportunities for decades, throughout its management by the USFS and NPS. While there have been changes over time, it has continued to offer a variety of seasonal visitor use opportunities, including camping, picnicking, hiking, fishing and sightseeing. Continuing to manage the area to improve visitor services would

contribute to beneficial effects on visitor experience. Some adverse effects, from crowding and difficulties in access during the shoulder seasons would also continue due to the small size of the monument and its ability to provide for increasing visitation.

Proposed improvements in the vicinity, such as reconstruction and rehabilitation of the Reds Meadow Road, relocation of the NPS maintenance facility and other GMP proposals would also result in a range of beneficial and adverse effects. Specifically, there could be some effects on visitor access and transportation under all alternatives. To minimize effects, the park would work to notify visitors of these delays in advance and would work with the USFS to manage them to reduce effects where possible.

Impact Avoidance, Minimization and Mitigation Strategies

To avoid, minimize or mitigate visitor experience impacts, the following strategies would be used:

- Projects would use sustainable practices and resources whenever practicable by recycling, reusing, and minimizing materials, minimizing energy consumption during construction, and reducing energy needs throughout the lifespan of the project.
- As required by Management Policies (NPS 2006), new buildings would be designed to meet a minimum silver LEED standard.
- Prior to and during construction, press releases to local media would inform visitors about conditions in the park during the project.
- During construction, signs would inform visitors of the construction activities and of potential closures or delays. Barriers and barricades, signs and flagging, as necessary or appropriate, would be used to clearly delineate work areas and provide for safe pedestrian travel through the construction area.
- As stated in the Devils Postpile Climate Friendly Parks Action Plan, the monument would reduce greenhouse gas emissions by increasing energy efficiency in all park buildings and housing, utilizing alternative energy sources when possible, and reducing transportation-related emissions through behavioral change.
- Finish construction would include providing vegetative screening, where appropriate.

Conclusion: There would be no effect, followed by potential long-term adverse effects on visitor experience from implementation of Alternative 1. There would be short-term adverse impacts on visitor experience under Alternatives 2-4 from replacement of the wastewater treatment system. These adverse impacts would be combined with long-term beneficial effects from the same action. There would be more beneficial effects under Alternatives 3 and 4, with the replacement of the comfort stations, whether in the same location (Alternative 3), or in a different location (Alternative 4) and from the additional vault toilets to assist with peak season toilet use. Actions under all alternatives would benefit visitor experience by continuing to allow seasonal access to and use of area resources, including a range of recreational opportunities. These effects would be greater in Alternatives 3 and 4 from improving the condition of and access to comfort stations and from providing new vault toilets to better accommodate peak use periods. Alternatives 2-4 would also allow for reopening the campground, which would have some long-term adverse effects on the use of staff to manage the campground and long-term beneficial effects for overnight visitors.

Chapter 4: Persons and Agencies Consulted

This environmental assessment is available for a thirty-day public review period. Notice of it will be mailed or emailed to a list of persons and agencies who have expressed interest in Devils Postpile National Monument proposed actions and events. This document will also be posted on the park's website located at <http://www.nps.gov/depo>. It is also available on the NPS Planning, Environment and Public Comment (PEPC) website (www.nps.gov/parkplanning).

Comments on this environmental assessment should be entered into PEPC or directed to:

Devils Postpile National Monument:
P.O. Box 3999
Mammoth Lakes CA 95346

A final decision document will be prepared based on the public comments and notice of it sent to reviewers. If substantial environmental impacts are not identified by reviewers, this environmental assessment will be used to prepare a Finding of No Significant Impact (FONSI) which will be sent to the Regional Director, Interior Regions 8, 9, 10, and 12 (former Pacific West Region) for signature.

For additional information concerning this environmental assessment, please contact the acting site manager, Kevin Killian (kevin_killian@nps.gov).

A. Park-Affiliated Tribes Consulted

During the preparation of the EA, outreach was conducted with park-affiliated tribes. Letters were sent to the following tribes when the proposal for the percolation and utility location testing were developed and when it was modified (July 29, 2020).

- Big Pine Paiute Tribe of Owens Valley
- Bishop Paiute Tribe
- Bridgeport Indian Colony
- Utu Utu Gwaitu Paiute Tribe of the Benton Paiute Reservation of California
- Fort Independence Community of Paiute Indians of Fort Independence
- North Fort Rancheria of Mono Indians
- Mono Lake Kutzadikaa Paiute Tribe
- Lone Pine Paiute-Shoshone Tribe

Because no responses were received, additional efforts to contact the tribes will be made during the public review period for this EA.

B. Public Involvement

Civic engagement during preplanning for this EA occurred during a formal civic engagement comment period from March 17, 2021 to April 1, 2021. Although numerous press releases were distributed, including to the park's mailing list, no public comments were received.

Approximately 80 press releases were sent to park media contacts and stakeholders. Because the park was in winter operations at this time, no outreach occurred through the park newspaper.

Public comments will also be sought for this EA. This EA will be posted on the NPS Planning, Environment and Public Comment (PEPC) website (www.nps.gov/parkplanning) and there will be a link to that site on the park's webpage.

C. Agencies Consulted

California State Historic Preservation Office

In accordance with Section 106 of the National Historic Preservation Act, the National Park Service provided the State Historic Preservation Officer (SHPO) of the California State Department of Archaeology and Historic Preservation an opportunity to comment on the area of potential effects associated with this project and the identification of historic properties within that area.

The NPS prepared a Determination of Eligibility (DOE) to evaluate the entire developed area for eligibility to the NRHP as a district. The buildings, structures and sites within the district were also assessed for their individual eligibility. The DOE included the ranger cabin, amphitheater, campground, campground access road, day use area, two parking areas, and two comfort stations constructed, established, or formalized between 1941 and the 1980s (Architectural Research Group 2020).

The California SHPO concurred on September 9, 2020 that the comfort stations and campground area were ineligible for the National Register (NPS_2020_0821_002). The SHPO had previously concurred (April 18, 2019) that the Mission 66 comfort stations themselves were ineligible for individual listing on the National Register (UAID NPS_2019_0304_001).

As evaluated herein, proposed actions associated with the proposed action/preferred alternative would have no adverse effect on resources listed or eligible for listing in the National Register of Historic Places or on other historic or cultural resources in the park. During the public review period, concurrence with this determination of effect will be sought from the SHPO.

Proposed actions have been designed to avoid known archeological resources. There would be no effect on archeological resources.

U.S. Fish and Wildlife Service

In accordance with the Endangered Species Act, the NPS contacted the USFWS database to confirm what federally listed species and habitat occurs in the park. The most recent downloaded list of species occurred on May 7, 2021. Six species were identified, for four there are no records of their occurrence. The whitebark pine does not occur in the project area. The two species that may occur within the monument are the Yosemite toad and the Pacific fisher. Accordingly, determinations of effect (may affect, not likely to adversely affect) for these species

are included in the analysis and concurrence with these determinations of effect will be sought from the USFWS during the public review period for this EA.

D. List of Preparers, Persons, Agencies Contacted

NATIONAL PARK SERVICE

Devils Postpile National Monument

Kevin Killian, Acting Site Manager
Deanna Dulen, former Superintendent
Monica Buhler, Chief, Natural Resources and Visitor Services
Catherine Dalrymple, Chief, Law Enforcement and Maintenance
John Fernandes, Maintenance Mechanic/Water operator
Alexis Radzicki, Budget Technician

Sequoia and Kings Canyon National Parks

Ginger Bradshaw, Environmental Planner

Yosemite National Park

Cicely Muldoon, Superintendent
Kevin Killian, Chief Ranger, Acting Devil's Postpile Site Manager
David Campbell, Vegetation Biologist (reviewer)
Scott Carpenter, former Cultural Resources Program Manager
Catherine Fong, Hydrologist (reviewer)
Jun Kinoshita, former Yosemite Branch Chief of Cultural Resources
Carson Lillard, Wildlife Biologist (reviewer)
Kendra Owenby, Archeologist (reviewer)
Jamie Richards, Public Affairs Specialist
Hope Schear, Section 106 Coordinator
Dan Sharon, Environmental Protection Specialist (reviewer)
Liz Williams, Cultural Anthropologist

Interior Regions 8, 9, 10 and 12 (former Pacific West Regional Office)
333 Bush Street - Suite 500, San Francisco, CA 94104-2828
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Rose Rumball-Petre, Environmental Protection Specialist (preparer)
Katie Bojakowski, Archeologist/Environmental Protection Specialist (reviewer)
Steven Bosilijevic, Civil Engineer
Kimberly Sykes, Architect
Joanna Dixon, Repair-Rehabilitation/Cyclic Maintenance Program Manager/Projects Branch
Chief Supervisor
Bradley Philips Outdoor Recreation Planner

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Appendix 1: Draft Floodplains Statement of Findings

Devils Postpile National Monument Replace Wastewater Treatment System Environmental Assessment Preferred Alternative/Proposed Action

In conformance with Executive Order 11988: Floodplain Management

Recommended: _____
Superintendent/Acting Site Manager Date
Devils Postpile National Monument

Certification of Technical Adequacy and Servicewide Consistency:

Chief, Water Resources Division Date
National Park Service

Approved: _____
Director, Pacific West Region Date
National Park Service

Introduction

Executive Order 11988: *Floodplain Management* requires the National Park Service (NPS) and other federal agencies to avoid to the extent possible, the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative, and when there is not, to evaluate the potential impacts of their actions on floodplains. The evaluation is intended to quantify the risk associated with the proposed action and identify mitigation measures to preserve floodplain values, and minimize the impact of floods on human safety, health, and welfare, and protect capital investment in federal infrastructure. This Floodplain Statement of Findings (FSOF) has been prepared according to NPS Floodplain Director's Order 77-2 and Procedural Manual 77-2 to comply with Executive Order 11988.

It is NPS policy to preserve floodplain values and to minimize potentially hazardous conditions associated with flooding. In Devils Postpile National Monument (Devils Postpile), floods can result from heavy precipitation (including rain-on-snow or rapid snowmelt events), unseasonably warm weather patterns, mudflows, or debris flows.

The NPS at Devils Postpile is proposing to reconstruct day use and campground comfort stations for the monument. This Floodplains Statement of Findings (FSOF) supplements information provided in the Wastewater Treatment System Environmental Assessment and Devils Postpile General Management Plan.

If a proposed action is found to be in the applicable regulatory floodplain and relocating the action to a non-floodplain site is not a practicable alternative, then flood conditions and associated hazards must be quantified as a basis for management decision-making and appropriate prescribed actions must be taken. If there is no other practicable alternative than for NPS facilities to occupy a regulatory floodplain, NPS policy permits the activity when a statement of findings is prepared to explain the rationale for the decision to use the floodplain. This FSOF also discloses the risk from flooding and discusses how mitigation of the risk will be achieved.

This FSOF applies to the proposed action in the Wastewater Treatment System Environmental Assessment, as well as to other currently existing monument facilities. In compliance with the Floodplain Management Guideline, where existing facilities are not in compliance, the planning document must identify those areas known or potentially known to be out of compliance and define short and long-term solutions that would be taken to reduce the flood risk to lower levels. According to an NPS Water Resources Division trip report (NPS 2011), all of the actions associated with the developed area in the monument are subject to floodplain compliance and should have been identified in a Floodplain Statement of Findings (FSOF) when the GMP was under preparation, however a FSOF was not prepared for the Devils Postpile General Management Plan (2015).

Project Description and Regulatory Floodplain

Devils Postpile National Monument is located within the upper montane and subalpine zones of the western slope of the Sierra Nevada Mountains in eastern Madera County, California. Its rectangular boundary is oriented north to south.

The Middle Fork San Joaquin River flows from north to south through the monument, except for a short detour into the Inyo National Forest and back, before it reaches the southern part of the monument and flows over Rainbow Falls downriver to the confluence of Kings Creek, and on to the north and south forks of the San Joaquin River. In the northern portion of the monument near the administrative area and campground, it meanders through meadows. Later the river descends more rapidly, with scattered pools, rapids, cascades, and waterfalls. The San Joaquin River is an important part of California's water supply, providing water for agriculture, municipalities, and wildlife.

The proposed action is to reconstruct the campground and day use comfort stations for the monument and to construct peak season vault toilets. During analysis for the development of a new wastewater treatment system, it was discovered that all of the viable sites in the monument, including existing facilities, were potentially located in regulatory floodplains.

Preliminary analysis of floodplains in the monument (NPS 2011) found that the flood hazard is not likely to reach destructive or dangerous velocities. The 100-year floodplain has not been mapped in the monument and the largest flood since the monument was designated occurred in 1997. A USGS river gage, installed in 2009 in the monument, has not been in place long enough to record most area flooding, nor to establish floodplain extent. The nearest gage to the monument with approximately 25 years of data was located on the North Fork San Joaquin River but was not functional during the 1997 flood.

Although a stream gage was not in place at the monument, the 1997 flood was selected to serve as a surrogate for the 100-year flood because it is "the flood of record on many nearby stream gages" (NPS 2011). At the monument, "... the 1997 flood reached a level of about the second book shelf in the ranger station, which is about three feet above the ground elevation³. . . none of the buildings in the vicinity of the Superintendent's cabin (this includes other park housing and the maintenance facility) were within the flood zone in 1997 flood."

Because the flood occurred in January, the monument was not open and therefore no park staff or visitor services were put at risk by that event. The campground is presumed to be "marginally within" the 100-year floodplain so there would be an associated risk to human health and life if large events occurred during the much busier visitor use season. The housing and maintenance area are located at the farthest margins of the left bank in the best possible location, given available land.

According to the trip report, the administrative housing and maintenance facility are also estimated to be "marginally within" the 100-year floodplain and fully within the 500-year floodplain (NPS 2011).

According to DO 77-2, construction of the new comfort stations is a Class I Action therefore, the *Regulatory Floodplain* is that expected to be inundated by the 100-year flood.

Most of the actions associated with monument development (existing comfort stations, picnic area, campground, ranger station, administrative housing area) are Class I actions and are also regulated by the 100-year flood, also called the Base Flood. Fuel and chemical storage that takes

³ At that location

place adjacent to the maintenance facility are Class II actions and are subject to compliance with the 500-year floodplain.

Description of the Flood Risk

The administrative boundary of the monument encompasses about 2.5 miles of the Middle Fork of the San Joaquin River. Most of the monument is designated wilderness and characterized by steep cliffs and a bedrock gorge carved by the river. Primary park development is located in the small part of the monument that is vehicle accessible.

This developed area is in a relatively broad, valley-like area. It is located on the far-left bank of the river on relatively high ground adjacent to a wide bend in the river. The bend exhibits a classic meandering stream morphology with actively evolving cutbanks and point bars. Continued channel migration should be expected through this stream reach and viewed as a natural condition. If infrastructure is threatened, then further evaluation may be appropriate (NPS 2011).

At least two river terraces exist on the left bank of the meander, both of which support park infrastructure. Immediately downstream of this broad valley, the channel is constricted by a relatively narrow bedrock channel that produces backwater conditions at high flows. Upstream, there is also a bedrock constriction which forms a cascade adjacent to the campground area. While this cascade is relatively well constrained by bedrock, an alternate flow path or high-water channel also exists, and is adjacent to the campground. This high-water channel "grades-out" into the picnic area and then on into the meadow that is just downstream of the developed area. It is likely that this side channel is the first area that would convey flood waters during a high-flow event (NPS 2011).

While constructing buildings that serve transitory purposes, such as comfort stations within their regulatory floodplain, may pose a risk to capital investment by the NPS, the overall investment is small. "In terms of visitor safety and protection of infrastructure investment, both the 100-year and 500-year floods are not likely to reach destructive or dangerous velocities through the developed area. This is primarily because of the relatively gentle channel and floodplain gradients through the area, and the backwater constriction just downstream" (NPS 2011). One notable exception is the "bypass" channel adjacent to the campground. When flow in the river reaches a high enough stage, water will spill through this bypass channel probably reaching dangerous velocities well before there are any out-of-bank flows through the rest of the campground.

Watersheds in the western Sierra Nevada Mountains may experience flooding from three distinct sources. Deep snowpack that accumulate throughout the winter generally produce a snowmelt flood-pulse in the spring to early summer months. Additionally, late summer thunderstorms, although very rare, may also produce a flood pulse, especially in smaller watersheds. Lastly, warm storms or atmospheric rivers originating from the Pacific Ocean can drop large quantities of relatively warm rain in the winter months, creating rain-on-snow events that may cause some of the largest floods in this region. The North Fork gage recorded several flooding events, caused by snowmelt which primarily occurred between May and July, rain-on-snow event which occurred in December and a late summer thunderstorm which occurred in August (NPS 2011).

In evaluating these three sources, the timing of the flood pulse is especially important as it relates to park operations and visitor use. More specifically, if the annual peak floods occur only before the park is open for the season, then the risk to human life is greatly diminished (NPS 2011).

Justification for Use of the Floodplain

Because of the location of the developed areas on river terraces in the only vehicle accessible part of the monument, there are no available development sites which are not subject to some potential for flooding without inducing substantially greater impacts to significant resources.

Under the current proposed action, the campground comfort station would be reconstructed in its current location while the day use comfort station would be moved to slightly higher ground to a location that improves visitor circulation (Figure 5 in attached Environmental Assessment). This alternative site for the day use comfort station is also within the 100-year floodplain. Vault toilets, to accommodate especially high use during the peak season would also be constructed in the campground. This FSOJ justification also includes retention of the picnic facilities, campground, ranger station, administrative housing area and the maintenance building. The other alternatives evaluated in the environmental assessment included retaining the day use comfort station in its current location. As noted above, while the picnic area, campground, ranger station and comfort stations are likely within the 100-year floodplain, the administrative housing area and maintenance facility are within the 500-year floodplain. Due to its location on a river terrace adjacent to the Upper Middle Fork of the San Joaquin River, the entire developed area within the monument is potentially within a regulatory floodplain (either for the 100- or 500-year flood) due to these uncertainties. As a result, no changes are proposed to the areas not considered in the EA.

The proposed action/preferred alternative was chosen after careful consideration of other natural and cultural resources impacts, as articulated in the Replace Wastewater Treatment System Environmental Assessment. There are no practicable alternatives to pursuing construction of the comfort stations outside of the floodplain. Most of the developed area at the park, including day and overnight use locations, is within its regulatory floodplain and visitors need to be able to readily access comfort stations.

Actions to Minimize Risk to Human Life and Property

Human life will be protected by warnings and planned evacuations and 100-year floodplain building occupancy would be day use only: To mitigate against loss of human life during flooding, the following will occur: flood hazard information will be developed and posted at the picnic area, campground, comfort stations, and visitor contact/ranger station. Contingent upon occupancy of the buildings, the NPS would develop an evacuation plan with posted signs to warn NPS staff, volunteer emergency staff, and others who may use the facilities of the potential danger of flood events and evacuation procedures. The monument partners with the State of California Department of Water Resources to maintain a meteorological station which includes a rain gage and automated snow depth sensor (snow pillow). These observations, along with USGS streamflow data from the gage located in the monument, are used to estimate potential runoff and flooding. The National Weather Service provides spot forecasts for the monument and communicates the potential for events such as flooding to NPS. Upon official notification of events that may lead to area flooding the NPS will take prudent measures to evacuate the campground and administrative areas and to remove essential equipment and materials from the site.

Although it is likely that a flood event will occur at some point in the future, flooding is more likely to occur in the winter from rain-on-snow events when the monument is closed, however flooding from spring snowmelt or thunderstorms is also a possibility. Nevertheless, following DO 77-2, the monument has taken prudent steps, consistent with public input to minimize the risk to staff and visitors prior to such an event occurring.

Relocation of Hazardous Materials Storage

Previous storage of hazardous materials in the maintenance building has been moved to a storage container with secondary containment adjacent to the maintenance building. Although that building is not designed to withstand predicted flooding (500 year) if necessary stored materials could also be temporarily relocated out of the monument.

Infrastructure investment is minimal, periodic loss is accepted as mitigation: There are no potential viable locations to construct either the day use or campground comfort station outside the floodplain. The peak use vault toilet is proposed in one of the highest viable locations in the campground. Therefore, due to the relatively low capital investment of these developments, the NPS accepts the risk associated with the placement of the comfort stations within the likely 100-year floodplain. Although the buildings have been designed to be slightly elevated to withstand the low level, more frequent flooding anticipated adjacent to the site, the NPS accepts the possibility that a rare event could result in the loss of one or both structures and will include within its contingency plan that possibility and its consequences on monument emergency operations. Other structures have been in place for much longer, many for more than 50 years.

Under climate change risk scenarios, area flooding is expected to increase in the future, increasing/exacerbating flood risk (Kuhn and Whitaker 2014). According to researchers analyzing climate change impacts on California's water problems, it is likely that under all climate change scenarios, there will be "larger-than-historical floods" in both the northern and southern Sierra Nevada. These floods may either be higher or lower in frequency, depending on drying trends (Das et al. 2011).

While the historic ranger station represents a more substantial investment, it has already been subjected to a large magnitude flow event in 1997 without loss or serious damage. That event was likely the largest in recent history, and with no site-specific flood information, it was used as a surrogate for the 100-year flood. (NPS 2011) Other occupied buildings in the administrative area, including housing, were not affected by the 1997 flood, and are therefore presumed to be outside their regulatory floodplain.

Natural and beneficial floodplain values will be preserved through the type of development:

Natural floodplain values would not be compromised by the construction of the buildings on a terrace above the river, well within the developed area of the monument. The small size and footprint of the comfort stations and minimal paving would not affect flood storage, infiltration, or flood elevations. Because the buildings would include some protection from flooding, be set slightly higher and are small, they would not impede flow or affect flood hydraulics.

Conclusion

Although the proposed comfort stations would be constructed within Devils Postpile National Monument, in an area likely within the presumed 100- year floodplain, the extent and type of inundation at this site is likely to be associated with low flood velocities. In addition, there are

no practicable non-floodplain locations because comfort stations for visitors need to be located where day and overnight uses occur, which is in the regulatory floodplain, and there is no buildable area in the monument outside of the regulatory floodplain that is also close to other visitor use facilities.

The proposed relocation site for the day use comfort station has similar flood risk compared to the current site. In use of area facilities, the monument will take all prudent steps to further minimize the risk to human life and accepts that flooding in the area could result in damage to, or loss of, the structures if an event of much greater magnitude than has been experienced in the past occurs.

The proposed actions to construct the comfort stations and vault toilet would not have appreciable effects on the risk of flooding or hazards to human life or property. There would be no significant effect on natural or beneficial floodplain functions. The project would not increase the risk associated with flooding for the 100-year or extreme event. Therefore, the National Park Service has determined the proposed actions would be consistent with Executive Order 11988 and Directors Order #77-2.

References

Kuhn, B. A., and T. Whitaker. 2014. Natural resource condition assessment for Devils Postpile National Monument. Natural Resource Report NPS/DEPO/NRR—2014/889. National Park Service, Fort Collins, Colorado.

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