

ATTACHMENT A: DETERMINATION OF NON-IMPAIRMENT

NPS *Management Policies 2006* (section 1.4) requires analysis of potential effects to determine whether or not proposed actions would impair a park's resources and values. The fundamental purpose of the national park system, established by the *Organic Act* and reaffirmed by the *General Authorities Act*, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the NPS the management discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of the park. That discretion is limited by the statutory requirement that the NPS must leave resources and values unimpaired unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values (NPS *Management Policies 2006*). Whether an impact meets this definition depends on the particular resources that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

An impact on any park resource or value may, but does not necessarily, constitute impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated. Impairment may result from visitor activities; NPS administrative activities; or activities undertaken by concessioners, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park. The description of the parks' purpose and significance is found below and is subject to the no-impairment standard.

Description of Park Purpose and Significance

Sequoia National Park was established on September 25, 1890. The primary purpose for establishing the park is described in the act's preamble:

Whereas, the rapid destruction of timber and ornamental trees in various parts of the United States, some of which trees are the wonders of the world on account of their size and limited number growing, makes it a matter of importance that at least some of said forests should be preserved. (26 Stat. L., 478)

The legislation further stated that Sequoia National Park is to be a place "dedicated and set apart as a public park, or pleasuring ground, for the benefit and enjoyment of the people," and shall be managed

“for the preservation from injury of all timber, mineral deposits, natural curiosities and wonders ... [and for] their retention in their natural condition.”

The purpose of Sequoia and Kings Canyon National Parks as defined in the parks’ General Management Plan (GMP) (NPS 2007) is as follows:

Protect the greater Sierran ecosystem—including the sequoia groves and high Sierra regions of the park—and its natural evolution forever.

Provide appropriate opportunities to present and future generations to experience and understand park resources and values.

Protect and preserve significant cultural resources.

Champion the values of national parks and wilderness.

Sequoia and Kings Canyon National Parks are significant because they contain the following resources, as stated in the parks’ GMP (NPS 2007):

The largest giant sequoia trees and groves in the world, including the world’s largest tree, the General Sherman tree

An extraordinary continuum of ecosystems arrayed along the greatest vertical relief (1,370 to 14,497 feet in elevation) of any protected area in the lower 48 states

The highest, most rugged portion of the high Sierra, which is part of the largest contiguous alpine environment in the lower 48 states

Magnificent, deep, glacially carved canyons including Kings Canyon, Tehipite Valley, and Kern Canyon

The core of the largest area of contiguous designated wilderness in California—the second largest in the lower 48 states

The largest preserved southern Sierra foothills ecosystem

More than 300 known marble caverns, many inhabited by cave wildlife that is found nowhere else

A wide spectrum of prehistoric and historic sites documenting human adaptations in their historical settings throughout the Sierran environments

Impairment Determinations for the Selected Alternative

Impairment determinations are not necessary for visitor experience, socioeconomics, public health and safety, environmental justice, land use, and park operations, etc., because impairment findings relate back to park resources and values. These impact topics are not generally considered to be park resources or values according to the *Organic Act*, and cannot be impaired the same way that an action can impair park resources and values. After dismissing the above topics, topics remaining to be evaluated for impairment include geology and soils, vegetation, water resources, and historic resources.

Geology and Soils

Sequoia and Kings Canyon National Parks occupy approximately 1,350 square miles within the central and southern portion of the Sierra Nevada. Included in the parks' rugged landscape is the highest peak in the contiguous United States, Mount Whitney, which rises to about 14,497 feet above sea level. The Giant Forest, Lodgepole, Wolverton, Wuksachi, and Red Fir areas are situated in the western mountainous terrain of the Sierra Nevada and the elevation ranges from 5,500 feet to 10,000 feet. The actual project area ranges in elevation from 6,000 feet to 8,000 feet. The area is composed of three distinctive geological units; from oldest to youngest, they include a granodiorite basement complex (pre-Tertiary period), glacial till composed of poorly sorted sediments (Pleistocene epoch), and recently deposited alluvium (Holocene epoch). Erosion by streams and glaciers has created a rugged and steep terrain, and level land is limited to a few small areas.

The soils in the project area are of two general types- glaciated and non-glaciated. Both are primarily granitic in origin and have developed through combinations of glaciation, stream sedimentation, and in-place weathering and decomposition of rock.

The project will occur primarily in previously disturbed corridors, or in developed areas. While there will be short-term minor adverse effects associated with trenching for the new water lines and facility construction, in the long term there will be beneficial effects from the new water line as there will be fewer leaks and less erosion. Because of these beneficial effects, the selected alternative will not result in impairment to geology and soils.

Vegetation

Extreme topographic differences and a striking elevation gradient (ranging from 1,360 feet in the foothills to 14,497 feet along the Sierra crest) create a rich tapestry of environments in the two parks, from the hot, dry lowlands along the western boundary to the stark, snow-covered alpine high country. This topographic and environmental diversity supports over 1,500 vascular plant taxa, including subspecies and varieties, which make up dozens of unique plant communities. These vegetation types can be categorized into six broad vegetation zones: oak woodland, chaparral shrubland, lower montane, upper montane, subalpine, and alpine. Vegetation in the project area can be classified as: coniferous without sequoia, coniferous with sequoia, coniferous with lodgepole pine, meadow, and riparian. There is one sequoia grove associated with this project, the Giant Forest sequoia grove.

Healthy, native terrestrial and riparian vegetation is necessary to fulfill the purposes for which the parks were established, and is key to the natural integrity and enjoyment of the parks.

The selected alternative will result in adverse impacts during construction work such as trampling and trenching, but will result in fewer disturbances to the giant sequoia ecosystem due to abandoning the existing water line in the Giant Forest, reducing the need for emergency repairs and trenching/digging in the long-term.

Riparian vegetation will be disturbed in the short-term during the replacement of the intake facilities at Wolverton and Silliman Creek. Mitigation will offset the adverse effects, and site rehabilitation will occur, resulting in no long-term adverse effects.

Overall, because there will be beneficial effects to the giant sequoia ecosystem by capping and abandoning the water line, and only minor adverse effects from the replacement of the existing water lines and the construction of associated facilities, the selected alternative would not result in impairment.

Water Resources

The four large river systems with headwaters within the parks are the North Fork of the Kern River, the five forks of the Kaweah River, the South and Middle Forks of the Kings River, and the South Fork of the San Joaquin River. Surface water occurs primarily as rivers and streams at lower elevations, with a greater occurrence of lakes and ponds at higher elevations. The quantity of surface flow follows an annual cycle, with the lowest flows typically occurring in August and the highest flows in May or June. Spring flows are primarily snowmelt from glaciers and snowpack at higher elevations; by late August, the source is primarily groundwater.

Groundwater is common in alluvial deposits in meadows and wherever decomposed or fractured granite is suitable to form an aquifer. Precipitation appears adequate to recharge the groundwater, but the actual quantity of stored water in aquifers is unpredictable. Rainfall and melting snow tend to rapidly infiltrate weathered and fractured rock. Even in areas of relatively solid rock, runoff tends to channel into the nearest fractures and crevices. These characteristics mean that much of the streamflow is a result of interflow, or shallow groundwater movement, rather than direct surface runoff. Groundwater supplies many meadows, seeps, springs, creeks, and perennial streams. Most of the water consumed in the parks comes from surface sources such as streams and springs. There are a few shallow wells with good water quality.

Water resources are critical to the preservation of park resources, and to allow for visitor use and enjoyment of park resources. The replacement and rehabilitation of existing water lines and associated facilities will occur primarily in previously disturbed corridors and in developed areas. There could be localized run off and erosion if digging occurs near streams and water resources, however, this impact will be short-term minor and adverse due to mitigation measures including erosion control. In the long-term there will be fewer emergency repairs, thus digging and related erosion would be reduced, reducing potential adverse effects on water resources.

Under the selected alternative, a new groundwater well approximately 700 feet deep, will be developed at the Pinewood picnic area. The new well will introduce groundwater pumping in an area where none currently exists. The nearest wet meadow ecosystem is Round Meadow, approximately 2,000 feet south of the well site and is considered beyond the area of influence of a low-yield well at the Pinewood picnic area. The valleys on either side of the Pinewood picnic area are the headwaters of intermittent or low-flow perennial streams. There is a chance that pumping groundwater from a well at Pinewood would cause a small decrease in streamflow, however, the low projected pumping rate and the horizontal and vertical separation between the well and streams would lessen the direct impact on streamflow. Additionally, pumping groundwater from a deep well that obtains water from fractures in the granite bedrock would spread the impact over a large, but unknown area. There may be infiltration of streamflow over some length of the adjacent creeks; in practice, there will be no observable or measurable effect on streamflow in the adjacent creeks. The anticipated low pumping rate and the distance to the headwaters of adjacent drainages will result in minimal to no streamflow reduction, and therefore, negligible impacts are expected.

The improvements to the water intake and distribution systems in the project area will have short-term adverse effects to water resources during construction. This includes increased turbidity during instream work; primarily there will be a surge in sediment when the temporary water diversions are constructed, and when they are removed and streamflows are restored. This adverse effect will be short-term until the area is stabilized. A monitoring strategy will be developed for the water systems on Silliman and Wolverton Creeks. Current technology will be integrated into the design of the new structures to allow for the monitoring of water flows. This monitoring program will help the parks determine the levels of

acceptable withdrawals under different precipitation regimes. Mitigation will offset the adverse effects during construction, but there would continue to be long-term moderate adverse effects on water resources at Silliman and Wolverton creeks from the alteration of stream functions due to the presence of dams and water diversion facilities in these creeks. However, this project is a replacement in kind and less than 1 acre will be permanently affected.

Water conservation will be improved due to capping and abandoning the deteriorating water distribution system, resulting in fewer leaks, resulting in long-term beneficial effects.

Most of the adverse effects from this project are short-term and can be effectively mitigated. The long-term adverse effects to Silliman and Wolverton creeks result in less than 1 acre of permanent loss of stream habitat combined. There will be beneficial long-term effects from water conservation and fewer emergency actions. Therefore, there will be no impairment as a result of implementing the selected alternative.

Historic Resources

The following historic resources are within the project area:

- The Marble Fork Bridge, located in the Lodgepole area, is listed in the National Register of Historic Places (National Register)(1978).
- In 1992, the Generals Highway was determined to be eligible for inclusion in the National Register.
- The water treatment plant at Lodgepole was constructed during the NPS “Mission 66” era which spanned the years from 1956-1966. As per NPS policy, “Mission 66” structures are to be treated as “potentially eligible” pending a formal determination of eligibility.
- The water diversion in Wolverton Creek was constructed in 1958 and the water diversion in Silliman Creek (near Lodgepole) was constructed in 1933-1934. These structures are over 50 years in age, and thus are viewed currently as potentially eligible; a formal determination of eligibility will be undertaken for each structure.
- Sections of the water lines and associated appurtenances range between 30 and 70 years in age. The water distribution piping through the Giant Forest was constructed in the 1930s and supported numerous structures that have since been removed in an extensive restoration project that occurred from 1997 to 2005.

In January 2011, the NPS sent a letter to the California State Historic Preservation Office to seek preliminary comments on the project proposal. No preliminary comments were received. The NPS prepared a Determination of Eligibility for the two dam diversion structures and the “Mission 66” water treatment plant at Lodgepole and submitted the documentation to the California State Historic Preservation Office for review on October 11, 2011. A letter dated February 6, 2012 from the California State Historic Preservation Office concurred with the NPS determination that the three structures are ineligible for listing in the National Register of Historic Places. On April 5, 2012, the NPS received a letter from the California State Historic Preservation Office concurring with the NPS determination that the overall project would result in *no adverse effect*. Therefore, implementing the selected alternative will not result in impairment.

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