

ATTACHMENT B: DETERMINATION OF NON-IMPAIRMENT

Sequoia and Kings Canyon National Parks Wilderness Stewardship Plan / Environmental Impact Statement May 2015

This document evaluates and determines whether the selected action in the Sequoia and Kings Canyon National Parks' Wilderness Stewardship Plan/Environmental Impact Statement Record of Decision (WSP/EIS) will result in impairment to park resources and values. This evaluation is directed by the NPS Organic Act of 1916 (16 USC, Section 1) and the NPS General Authorities Act of 1970 (16 USC Section 1A-1, as amended). Per NPS *Management Policies 2006*, section 1.4.5, an action constitutes an impairment when its impact "will harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values." Whether an impact meets this definition depends on the particular resources that will 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 past or planned future impacts. An impact on any park resource or value may, but does not necessarily, constitute impairment. An impact will be more likely to constitute an 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.

The park resources and values that are subject to the non-impairment standard include:

- The parks scenery, natural and historic objects, wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources;
- Cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- Appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- The park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- Any additional attributes encompassed by the specific values and purposes for which the park was established.

The description of the park purpose and significance as it specifically relates to the wilderness of Sequoia and Kings Canyon National Parks is found in Chapter 1 of the WSP/FEIS.

Pursuant to the NPS Guidance for Non-Impairment Determinations (October 31, 2011), non-impairment determinations must include a specific discussion for each park resource and value subject to the non-impairment standard. The discussion must include an explanation as to why the selected action's impacts will not result in impairment. Impairment findings pertain only to park resources and values, and are not

necessary for visitor experience, socioeconomics, public health, park operations, or similar topics or concerns. The impact topics that are evaluated for purposes of this impairment determination include soils, water quality, vegetation, wildlife, special-status species, and cultural resources.

SOILS

Visitor use and wilderness management activities can have adverse effects on soils. Impacts on soils tend to be concentrated along trail corridors, campsites, and other attractions, such as vistas, ranger stations, and near food-storage boxes. The intensity of impacts can vary widely depending on the local setting, the environment, and the timing of visitor use. The types of impacts that occur as a result of visitor use and wilderness management activities include erosion, soil compaction, contamination, and direct removal.

The selected action does not materially affect the soils of Sequoia and Kings Canyon National Parks. Visitor use and administrative actions under the selected action will be similar to current conditions. The effects of current visitor use and administrative activities are not creating recognizable threats to soils. Site-specific trail maintenance and construction activities could result in localized adverse or beneficial effects from soil disturbance and from trail stabilization.

The selected action provides for similar levels of stock use throughout wilderness. As a result, some impacts on soils, especially compaction, devegetation, incision, and widening of trails will occur. Wilderness wide, impacts will be small, with the potential for more substantial adverse impacts at a few specific sites. These sites will generally be limited to especially steep or wet sections of the most used trails in wilderness, and in wet areas such as stream crossings in meadows.

Effective monitoring of meadows in accordance with the Stock Use and Meadow Monitoring and Management Strategy protocols (appendix D of the WSP/FEIS), ranger patrols, and visitor reports will provide necessary information to minimize the impacts by restricting access and use. By closing selected sites to grazing, trampling impacts in the closed meadows will be reduced. Due to the limited adverse impacts on soils and implementing monitoring and management actions, the selected action will not result in impairment to soils.

WATER QUALITY

There is little evidence that visitor use and administrative activities, including human and animal waste, has affected water quality in the parks. Water quality in the parks' wilderness is good. Because visitor and stock use levels under the selected action will be similar to current conditions, few changes on water quality are expected. Studies show detectable effects on water quality in the parks' wilderness where visitors recreate, but these effects are very small (Suk et al. 1987; Clow et al. 2011). Some measurable impacts have occurred, especially near the most heavily used mixed-use sites; however, the impacts remain below accepted thresholds for health or ecological concerns. Under the selected action, off-trail stock-party sizes will be reduced, resulting in beneficial impacts on water quality in localized areas adjacent to and just downstream of the most heavily visited sites; however, the improvements are anticipated to be too small to quantify. Beneficial effects on water quality will also occur in off-trail areas that will be closed to stock grazing (many of which will be meadows), as well as riparian areas associated with the closed areas. Removal of existing, failing privies and installation of new privies will create additional beneficial effects on water quality, although these improvements will also be small. The selected action will result in little change to water quality; therefore, the selected action will not result in impairment to the surface water and groundwater resources.

VEGETATION

Wetlands and Meadows

Wetlands and meadows can be affected by human and stock trampling and grazing. Hiking access to wetland and meadow areas under the selected action will be similar to current conditions; however, the percentage of meadow area open to stock travel will be reduced from 64% to 54%. While visitor use and stock will still have the potential to cause trampling impacts in localized areas, resulting in locally detectable vegetation loss, these small scale impacts are insignificant on a landscape scale, and are not expected to result in long-term changes in function or composition of wetlands and meadows. In the case of trampling by stock, impacts on meadows are expected to be reduced when compared with the no action alternative, since some additional meadows would be closed to stock access.

Grazing also has the potential to impact wetland and meadow vegetation, but these impacts are anticipated to be reduced under the selected alternative when compared with the no action alternative. The percentage of the parks' meadow area open to grazing will be reduced from 51% to 48%. Stock grazing under the selected action will remain similar to current levels, but the intensity of grazing will be controlled with site-specific grazing capacities developed in the *Stock Use and Meadow Monitoring and Management Strategy* (appendix D of the WSP/FEIS). These capacities will reduce grazing and trampling impacts in the most popular destinations as compared with the no action alternative. The capacities will also protect areas from increased grazing pressure that might result from displacement of grazing use from nearby meadows that have reached capacity or are otherwise closed.

While there will be potential for ongoing impacts associated with trampling and grazing, these impacts are expected to be of limited scale, duration, and intensity, and impacts are expected to be equal to or less than those occurring under the no action alternative. Therefore, the selected alternative will not result in impairment to wetlands and meadows.

High-elevation Long-lived Tree Species

Four long-lived tree species with special resource or research value grow in the high elevations of the parks' wilderness: whitebark pine (*Pinus albicaulis*, a candidate for federal listing); foxtail pine (*Pinus balfouriana* subsp. *austrina*), Sierra juniper (*Juniperus grandis*), and limber pine (*Pinus flexilis*). Three of the species are relatively common (whitebark pine, foxtail pine, and Sierra juniper) and one is quite limited in the parks (limber pine). These species have the potential to be impacted by firewood collectors, who may burn ancient downed wood, damage living trees when downed wood is scarce, and trample seedlings and other vegetation while searching for firewood.

The selected alternative would impose additional campfire closures in high elevation areas where long-lived tree species are present. Campfires will be permitted in 35,857 acres of high-elevation conifer habitat that supports the four subalpine or upper montane long-lived tree species (10.3% of the habitat area) as opposed to 44,212 acres of high-elevation conifer habitat under current conditions.

These closures will protect downed wood resources and old living trees, and reduce trampling impacts on high-elevation vegetation. In these areas, downed trees and wood will remain in place as paleo resources, which provide insight into the region's climate history. Downed wood will also be available as nutrients and habitat for seedlings. Mutilation of old living trees, which can occur when downed wood is depleted through campfire use, will cease in newly closed areas. Trampling of long-lived tree seedlings and non-target vegetation types, such as lodgepole pine, mountain hemlock, western white pine, and red-fir, will be reduced by eliminating the need for off-trail firewood collection.

Compared to current conditions, the selected alternative will better protect high-elevation, long-lived tree species from impacts associated with campfire use, such as the depletion of downed wood, mutilation of live trees, and trampling during firewood collection. The selected alternative will therefore not result in impairment of high-elevation, long-lived tree species.

Alpine Vegetation

The wilderness of the parks protects most of the subalpine and alpine environment of the southern Sierra Nevada of California. With nearly half the area of the parks (48%) above 10,000 feet, the parks' wilderness is dominated by high-elevation habitats. Most of the alpine vegetation in the parks, found in some of the most remote and inaccessible areas, is undisturbed. Where visitor use is concentrated, however, the slow-growing alpine vegetation can show signs of impact. Due to the short growing season and harsh conditions in the high-elevation environment, recovery can take a long time.

Under the selected alternative, visitor and administrative use levels will remain comparable to current conditions, but 70% of the mapped alpine vegetation in the parks, including alpine meadows, will be closed to stock, decreasing potential trampling and grazing impacts. The protection of alpine meadows is also enhanced due to the closure of several meadows to grazing and the continuance of opening/closing dates.

As a result, impacts to alpine vegetation under the selected alternative will remain similar to current conditions. Vegetation in cross country areas will remain undisturbed except in the few locations where visitors have established informal trails, such as Mt. Langley. Trail corridors and high-elevation camp areas will continue to be the primary areas in which impacts are observed. While these impacts can be locally severe, they are insignificant at the landscape or ecosystem scale. Thus, the selected action will not result in impairment of alpine vegetation.

Plants of Conservation Concern (Park Sensitive Plant Species)

The parks support a rich and diverse vascular flora composed of more than 1,560 taxa. Of these, only one plant species is listed under the California Endangered Species Act, and one is under review for federal endangered listing. The parks are home to an additional 77 vascular plant and non-vascular species and subspecies that have been ranked as rare by the California Native Plant Society and the California State Natural Diversity Database (Huber et al. 2013). Of these 77 park sensitive species, 29 were analyzed in the WSP/FEIS, as they exist in meadows used by stock, uplands open to cross-country travel by stock, or destinations popular with rock climbers and cross-country hikers, and are therefore more likely to be impacted by visitor or administrative use.

However, because these species are by definition rare, trampling by visitors is infrequent under current conditions, and there is no evidence of population level impacts. Visitor use levels and patterns are not expected to change under the selected alternative, although some additional meadows would be closed to stock, and grazing intensity in meadows will be managed through the implementation of site-specific grazing capacities and other management actions such as opening dates and temporary closures.

Therefore, impacts on plants of conservation concern are predicted to be infrequent and localized under the selected alternative, and impacts are not expected to be observable at the population level. Impacts are also not expected to lead to the listing of these species. Therefore, the selected action will not result in impairment of sensitive plant species.

Nonnative Plant Species

Surveys have detected 219 nonnative plant taxa present within the parks (Tu et al. 2013) that were either deliberately (cultivated), or accidentally introduced by humans. Of these, 78 are considered invasive (Gerlach et al. 2003; Tu et al. 2013). The probability of invasion is highest when propagules are introduced to disturbed areas with ample light, nutrients, and water, such as trail crossings of meadows, streams, or seeps; or sites with recent fires. Most of the mapped invasive plant populations in the parks' wilderness are found along trails, which are recognized as important vectors for the dispersal of invasive plants into un-trailed areas (Mutch et al. 2008b). Potential vectors in the wilderness include hikers, helicopters, and stock.

Under the selected alternative, most aspects of visitor use will remain similar to current conditions; activities such as trail construction and maintenance that cause soil disturbance will also be similar to current conditions. However, the selected action will allow less off-trail stock travel and off-trail grazing than current conditions. Total stock use will likely remain similar to current levels, but could be reduced slightly in the Mount Whitney Management Area. Stock feed restrictions and improved prevention and detection strategies will also be implemented. As a result, the selected alternative will slightly lower the potential for introducing nonnative plants, benefitting native vegetation. These benefits would be most pronounced in certain high-value habitats, like wetlands and meadows that will be closed to stock. Therefore, the selected action will not result in impairment to the parks' vegetation from introduction of nonnative plant species.

WILDLIFE

Black Bear (*Ursus americanus*)

Black bear behavior can be negatively affected when bears obtain human food, and can lead to food habituation and potentially dangerous encounters with visitors. Bears are most likely to obtain human food in areas of high visitor use coupled with poor food storage practices. Under the selected alternative, visitor use levels are expected to remain similar to current conditions, but there is some risk that food acquisition could increase, because about 40% of the fixed food-storage boxes in the parks' wilderness would be removed. However, evidence from visitor surveys within the parks' wilderness and other wilderness areas suggests that visitor compliance with food storage requirements is high. With proper food-storage practices (e.g., use of portable containers or counter-balancing), little increase in food acquisition by bears is expected. In addition, the selected alternative retains food storage boxes in some areas of high visitor use and a history of food acquisition by bears. Therefore, the selected action will not result in impairment of black bears.

Birds

The brown-headed cowbird (*Molothrus ater*) is a nonnative species associated with cattle and stock operations that has affected dozens of Sierra Nevada bird species by parasitizing nests. Brown-headed cowbirds have been observed in many areas of the parks, albeit rarely, and most often at lower elevations and near roads and developed areas. Available data indicate that brown-headed cowbird parasitism is not currently contributing to native bird population dynamics in wilderness. Under the selected alternative, the closure of additional meadows to grazing could further reduce habitat quality for brown-headed cowbirds. Since there is little evidence of cowbird presence in the parks currently, observations are generally associated with developed areas, and the selected alternative does not improve habitat conditions for brown headed cowbirds, no significant increases in brown-headed cowbird parasitism are expected. Therefore, the selected action will not result in impairment of the parks' native bird species by brown-headed cowbirds.

Invertebrates

Invertebrates may be impacted by human and stock trampling and stock grazing. Under the selected alternative visitor-use levels will be similar to current conditions, so the likelihood of trampling impacts by people and stock will not change. Meadow closures may benefit invertebrates by reducing or eliminating stock use from the closed meadows, but available data indicate that the beneficial effects will be minimal. The selected action will have little effect, either adverse or beneficial, on invertebrates of the parks; therefore, the selected action will not result in impairment of invertebrates.

SPECIAL-STATUS SPECIES

Section 7 of the Endangered Species Act (ESA) requires all federal agencies to ensure that their actions do not compromise the existence or critical habitat of a listed species. Although habitats in the parks support many species with special status, only those species potentially affected by the actions of the WSP were considered.

Yosemite toad (*Anaxyrus canorus*)

The Yosemite toad is listed as a federally threatened species (USFWS 2014). Under the selected action, Yosemite toads could be impacted by visitor disturbance and by trampling. The selected action will reduce impacts on Yosemite toads by converting several informal or abandoned trails to maintained trails, which would be routed further away from toad breeding habitat; implementing smaller party-sizes for stock groups and off-trail hikers; limiting stock-parties to day-use only in toad habitat; and prohibiting grazing or stock travel in some toad habitat. Overall, the selected action resulted in a USFWS determination of *may affect, but not likely to adversely affect* for the Yosemite toad. Therefore, the selected action will not result in impairment of this species.

Mountain Yellow-legged Frogs – Northern distinct population segment (DPS) of mountain yellow-legged frog (*Rana muscosa*) and Sierra Nevada yellow-legged frog (*Rana sierrae*)

Mountain yellow-legged frog habitat overlaps with relatively popular areas of wilderness located near the Pacific Crest Trail (PCT)/John Muir Trail (JMT), Bishop Pass, Rae Lakes Loop, Mount Whitney area, the High Sierra Trail (HST), and the Lakes Trail. Under the selected action, the potential for hikers and stock to encounter mountain yellow-legged frogs will remain similar to current conditions. Mountain yellow-legged frog populations could be disturbed by hikers or stock, and individual frogs could be trampled by hikers or stock, but trampling is unlikely to result in adverse effects at the population level. Habitat degradation from trails or stock use could adversely affect mountain yellow-legged frogs, but given the few locations where frog populations coincide with trails, the potential for habitat degradation will be small.

Slight beneficial effects on mountain yellow-legged frogs and/or frog habitat could result from changes to ten areas where stock travel will be eliminated or restricted to within 100 yards of the trail, and from eliminating grazing in four other areas. In areas open to grazing, new controls on grazing could provide slight benefits. The potential for injury or mortality to mountain yellow-legged frogs from trampling remains under the selected action, but the probability is very low and would be highly unlikely to result in population-level impacts. Overall, the selected action resulted in a USFWS determination of *may affect, but not likely to adversely affect* for mountain yellow-legged frogs. The selected action will not result in impairment of the Sierra Nevada yellow-legged frog or the northern DPS of the mountain yellow-legged frog.

Sierra Nevada bighorn sheep (*Ovis canadensis sierrae*)

Sierra Nevada bighorn sheep have been listed as federally endangered since 2000 when only 122 animals were known to exist. With federal recovery efforts, this population grew to about 500 by 2012. Under the selected alternative, reduced visitor use levels in popular areas (e.g., Mount Whitney Management Area), reduced stock-party sizes (on and off-trail), and a prohibition on stock in certain areas and meadows could reduce disturbance to bighorn sheep. However, these beneficial effects are minimal. Overall, the selected action resulted in a USFWS determination of *may affect, but not likely to adversely affect* for the Sierra Nevada bighorn sheep and could result in a slight modification of the critical habitat. Because the impacts of the selected action will not be significantly adverse or beneficial, and will not result in population-level impacts, the selected action will not result in impairment of Sierra Nevada bighorn sheep.

CULTURAL RESOURCES

Archeological and ethnographic resources have the potential to be impacted by construction or project-related ground disturbance. Under the selected action, trails could be built or upgraded; new campsites, including stock sites, could be established; and privies could be constructed at popular areas. Much of the work conducted in wilderness will be accomplished under the Nationwide Programmatic Agreement between the NPS, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (2008).

In accordance with section 106 of the National Historic Preservation Act (NHPA), assessments for projects will occur on a site-specific and case-by-case basis prior to implementation. Archeological resources, historic structures, cultural landscapes, and known ethnographic resources would be managed in accordance with the NHPA and other laws, regulations, and directives that direct the NPS to protect cultural resources. If National Register-eligible resources are identified, the construction would be sited to avoid the resources.

Of the seven cultural landscapes in the wilderness, six would continue to be protected under the selected alternative as the parks would continue to preserve and maintain these cultural landscapes in accordance with the NHPA, Department of the Interior, and NPS policies: the Kern Canyon Ranger Station / Lewis Camp Area, the Barton Lackey Complex, Colony Mill Road, the John Muir Trail, the High Sierra Trail and the “Early Trail System” of Sequoia and Kings Canyon National Parks. These six cultural landscapes would continue to be protected and would not be affected by the undertaking. The potentially eligible cultural landscape, the Bearpaw Meadow High Sierra Camp, could be altered by the removal of the 1964 constructed Bearpaw Meadow Ranger Station. Depending on the outcome of the formal determination of eligibility, this action may be considered beneficial or adverse.

Because potential adverse effects will be avoided or mitigated through the National Historic Preservation Act Section 106 process, the selected action will not result in impairment to cultural resources.

CONCLUSION

The WSP/FEIS provides direction to the NPS for the next 15 to 20 years regarding the use and protection of wilderness in the parks. The NPS will use the management framework established by the WSP to preserve wilderness character and provide opportunities for public use and enjoyment of wilderness.

In the professional judgment of the superintendent, the implementation of the selected action will not result in impairment of the parks’ resources or values whose conservation is necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the parks; that are key to the natural

or cultural integrity of the parks or to opportunities for enjoyment of the parks; or that are identified as significant in the parks' 2007 General Management Plan or other relevant NPS planning documents.

This conclusion is based on the analyses presented in the WSP/FEIS, which incorporates consideration of the parks' purpose and need, the desired conditions, the goals and objectives of a wilderness stewardship plan, input from subject matter experts, consultation required under Section 7 of the ESA and Section 106 of the NHPA, and comments provided by the public and other entities.