

MINIMUM REQUIREMENT / MINIMUM TOOL ANALYSIS

This is the minimum requirement / minimum tool analysis decision matrix used for all Sequoia and Kings Canyon National Parks projects (adapted from Arthur Carhart National Wilderness Training Center's *Minimum Requirement Decision Guide*). This was originally drafted in 2006, but updated and revised throughout the EA process.

SEQUOIA AND KINGS CANYON NATIONAL PARKS WILDERNESS AND BACKCOUNTRY MINIMUM TOOL ANALYSIS—2009

Background

Section 4(c) of the Wilderness Act states: “... *except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be ... no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.*”

Section 6.3.5 of NPS *Management Policies 2006* states that the minimum requirement concept will be a two-step process to (1) determine if the management action is necessary “*for administration of the area as wilderness and does not cause a significant impact to wilderness resources and character; and (2) the techniques and types of equipment needed to ensure that impacts on wilderness resources and character are minimized.*” Also, “*When determining minimum requirements, the potential disruption of wilderness character and resources will be considered before, and given significantly more weight than, economic efficiency and convenience.*”

Section 5.14 of Sequoia and Kings Canyon National Parks' BMP (which covers both wilderness and non-wilderness backcountry and is NEPA compliant), Administration, provides guidance on how park managers are to treat the above generally prohibited actions of section 4(c) of the *Wilderness Act*. Specifically treated are radio communications (5.14.2.1), helicopters (5.14.2.2), mechanized trail maintenance equipment (5.14.2.3), cabins (5.14.2.4), administrative camps (5.14.2.5), administrative stock use (5.14.2.6), NPS backcountry crews (5.14.2.7), and NPS personnel (5.14.2.8). Section 5.14.3 also provides reference to the *Administrative Use Guideline Addendum* (January 1985), which provides further clarification on administrative and management actions occurring in Sequoia and Kings Canyon National Parks' wilderness and backcountry.

Section 5.16 of Sequoia and Kings Canyon National Parks' BMP, Scientific Study and Impact Monitoring, provides guidance on how park managers are to conduct “scientific study and monitoring” in wilderness and backcountry areas.

The 2007 Record of Decision for the 2006 General Management Plan and FEIS states: “The parks’ designated wilderness and other areas managed as wilderness are zoned to reflect the varying intensities of use of different areas. In heavily traveled zones, there exist engineered trails and bridges, food lockers, designated campsites, and toilets to protect park resources, while in less-used areas, amenities are minimal or non-existent. A new subsection, below in italics, entitled “*Decision-making Process for Facilities within Backcountry and Wilderness Zones,*” is added to the GMP/FEIS (Vol.1, Page 67) to clarify the action.

This General Management Plan is a programmatic plan. The GMP provides conceptual guidance for park managers about the kinds of resource conditions, visitor services, and visitor experiences that best fulfill the mission of these parks. The listing of categories of “appropriate facilities” within the individual zone prescriptions serves only to exemplify the types of facilities that may now exist or

that the parks may wish to consider at some point in the future. For a new facility to be considered, or for an existing facility to be repaired or replaced within the Major Trails, Secondary Trails, or Cross-Country Areas zones, the parks would conduct the appropriate level of compliance under the National Environmental Policy Act (i.e., Categorical Exclusion, EA, or EIS). Incorporated into any such compliance would be appropriate consideration of the Wilderness Act (minimum requirement analysis), the Endangered Species Act, and the National Historic Preservation Act. Further, installation of or repairs to facilities would have to comply with any prescriptions contained in the action alternatives considered in this plan. Only facilities that undergo additional site-specific compliance and that comply with all applicable legal and planning requirements would be constructed or repaired.

STEP 1: DETERMINING THE MINIMUM REQUIREMENT

Is administrative action needed?

What is the problem or issue that may require administrative action? Include references from other legislation, policy, or plans, decisions, analyses, and how this issue is addressed in those documents.

Sequoia and Kings Canyon National Parks propose to address the deteriorating condition of three wilderness ranger stations in order to make them more effective for wilderness administration, resource protection, and visitor education. The stations to be considered are Le Conte, Rae Lakes, and Crabtree.

Wilderness rangers protect and monitor the wilderness, provide visitor services, and carry out resource management projects. Visitor services include education, emergency medical treatment, and search and rescue. The ranger stations also provide support to other park wilderness functions, such as research, and to park cooperators conducting data collection, such as the California Cooperative Snow Surveys.

Due to the size of the parks' wilderness (designated wilderness is 807,962 acres and approximately 30,000 acres of proposed wilderness) ranger stations have been determined to be necessary in order to provide the above listed actions and services in the remote areas of the wilderness. Currently the ranger stations at Le Conte, Rae Lakes, and Crabtree are at or approaching the end of their lifespan. Major repair or replacement is necessary for them to continue to serve their purpose as administrative facilities for wilderness rangers and wilderness-affiliated park operations. The situation at Rae Lakes is particularly acute in that the wooden tent frame is rapidly deteriorating and requires immediate action.

Section 4(c) of the *Wilderness Act* provides for both absolute and general prohibitions in wilderness areas. The actions discussed in this analysis are general prohibitions. The NPS and other wilderness land management agencies are authorized to determine whether or not a general prohibition (in this case the landing of aircraft, structures or installations, and the use of motorized equipment) is "necessary to meet minimum requirements for the administration of the area for the purpose of this Act."

The parks' 2007 FGMP/FEIS states, "Up to 96.10% of the parks are designated wilderness or are compatible with management as wilderness. Resource conditions in the parks' backcountry and wilderness areas are improved. Facilities are evaluated for usefulness and compatibility with wilderness, and additional facilities are considered only in the non-wilderness backcountry." The FGMP/FGEIS requires that the NPS "assess backcountry ranger stations and replace or rehabilitate as necessary." The proposal meets the management policy of the 1986 Backcountry Management Plan (BMP) (5.14.2.4), which states: "Cabins [ranger stations] are located at various places in the backcountry as needed for

backcountry rangers, snow survey, etc. These cabins will continue to be maintained and used for such activities.”

The parks’ BMP Administrative Addendum states that cabins (ranger stations) that have been normally and traditionally used for ranger patrol, snow surveys, or other administrative use will be maintained and replaced as needed. Other structures will be removed.

Le Conte, Rae Lakes, and Crabtree ranger stations are each listed in appendix A of the Administrative Addendum as structures that will remain.

The EA for the BMP states that a minimum number of structures will be allowed in the backcountry, including existing ranger stations and snow survey cabins.

Sequoia and Kings Canyon National Parks have conducted a Minimum Requirement Determination and Analysis as documented in Management Directive 49 (NPA 2009, Management Goals section), which states that wilderness management should provide for

- The safety of visitors, which enhances enjoyment;

- The protection of the wilderness resource through educational efforts and repair of impacted areas; and

- “Gathering and dissemination” of information on wilderness use patterns and activities, which is utilized in planning processes for long- and short-term wilderness preservation and stewardship.

These outcomes are achieved through trail patrols, public contact activities, rehabilitation of damaged areas, emergency medical actions, search and rescue actions, and the preparation of reports detailing wilderness conditions and public use patterns.”

Management Directive 49 (NPS 2009, section 2.B) also states:

Due to its size and high level of use, it is necessary to maintain a system that provides for controlled levels of use of *park wilderness areas*. This consists of a seasonal wilderness permit system with use quotas, regulatory actions for resource protection (e.g., food canister and fire limit requirements), restoration and closure actions, and the subsequent necessity for rangers conducting these actions to reside temporarily within the wilderness. This means that wilderness ranger stations are essential intrusions to protect resources and provide education and emergency services. Options that do not provide for stations do not allow adequate patrol coverage of the vast area. In order to enhance enjoyment and protect the wilderness resource, the presence of rangers deep within the wilderness is required.

The following questions assist in analyzing whether the issue needs to be resolved in wilderness. Do not consider what tools are to be used here.

Is this an emergency? No.

Is this problem/issue subject to valid existing rights, such as access to valid mining claim, state lands, etc.? No.

Can the problem/issue be addressed by administrative actions outside a wilderness area? No.

Is there a special provision in legislation (the 1964 Wilderness Act or subsequent laws) that allows this project or activity? No.

The following questions are provided to evaluate whether resolving the issue protects wilderness character and values identified in the Wilderness Act. Answer the questions in terms of the need to resolve the issue/problem.

If the issue/problem is not resolved, or action is not taken, will the natural processes of the wilderness be adversely affected?

Yes, there would likely be long-term minor to moderate adverse effects on the wilderness resource. Rangers would not be as effective in providing preventive and corrective wilderness protection actions. Rangers would not be as effective in monitoring, correcting issues, and reporting on wilderness resource status. Possible damage to natural processes and features, particularly at meadows where grazing is authorized, could occur because issues are not discovered in time for effective remedial action.

If the issue/problem goes unresolved, or action is not taken, will the values of solitude or primitive and unconfined type of recreation be threatened?

Yes, there would likely be long-term minor to potentially moderate adverse effects on wilderness condition for the same reasons as described above. In addition, rangers would not be as effective at maintaining and cleaning camps or removing intrusions on wilderness aesthetics and processes. As stations deteriorate, they would require increased helicopter and stock supply trips to maintain them at a minimally safe and effective level of operation. During these activities there would be minor localized loss of solitude but, over the long term, solitude and unconfined opportunities for recreation would increase.

If the issue/problem goes unresolved or action is not taken will evidence of human manipulation, permanent improvements, or human habitation be substantially noticeable?

Yes. The existing structures, especially Rae Lakes Ranger Station, do not meet the parks' *Architectural Character Guidelines* for rustic structures in wilderness settings. As they exist now, they are an intrusion on wilderness character and scenic resources. More aesthetically pleasing and better designed structures may be less intrusive depending on the perception of the wilderness visitor. If rangers spend inordinate amounts of time maintaining their stations, they have less time for wilderness patrol, and would spend less time educating and contacting the public, preventing and repairing resource damage, removing garbage and illegal camps, and enforcing "no fire" and other minimum impact regulations that reduce the signs of human use and habitation.

Does addressing the issue/problem or taking action protect the wilderness as a whole as opposed to a single resource?

Yes. Rangers would be able to effectively patrol the wilderness, contacting and educating visitors about minimum-impact camping techniques; cleaning and maintaining camps; enforcing wilderness regulations; and monitoring, evaluating, and reporting on resource issues. Rehabilitating or building new stations would bring the stations into compliance with the parks' *Architectural Character Guidelines* for rustic structures in wilderness settings. This could result in less intrusion on the wilderness experience of some visitors. In addition, Le Conte and Rae Lakes stations are vulnerable to break-in by bears and other animals. A more secure structure would prevent this and ensure bears and other wildlife do not obtain human food.

Rangers at the Le Conte, Rae Lakes, and Crabtree stations perform wilderness stewardship actions for 98, 50, and 39 square miles of wilderness, respectively.

Does addressing this issue/problem or taking action contribute to protection of an enduring resource of wilderness for future generations?

Yes. Rangers would be able to more effectively patrol the wilderness performing preventive and remedial actions, such as contacting and educating visitors on minimum-impact camping techniques (preventive measures); cleaning and maintaining camps (remedial measures); enforcing wilderness regulations; and evaluating and reporting on resource issues, which leads to more informed wilderness management decisions by park managers.

Is this an issue for reasons other than convenience or cost of administration?

Yes, this is an issue of providing optimal wilderness resource protection, wilderness stewardship, resource monitoring, and supporting visitor services for recreational opportunities in wilderness, as well as visitor safety. This action is the means by which wilderness resources and character can be most effectively protected. Cost and convenience are considered in every management action, but these are secondary to the primary purpose of providing for effective wilderness stewardship.

If administrative action is warranted, then what is the minimum action which will resolve the issue?

An EA has been prepared that discusses different alternatives to resolve the problems of structural safety and effectiveness of ranger operations in protecting the wilderness resource and character.

A no-action alternative was considered. Under this alternative, the stations would continue to deteriorate, maintenance costs and personnel time for repair would continue, and impacts due to supporting repair using helicopters or stock would continue to increase. Visitor services would be increasingly adversely affected and wilderness management goals could not be effectively carried out. This alternative does not meet the objectives of the *Wilderness Act* or the parks' mandate. It does not meet the project objectives.

An alternative involving repairing the existing stations was considered. It would require greater impacts from construction activity but would not achieve the goal of stations that are fully structurally sound or safe in winter. It does not adequately achieve the project objectives of wilderness protection or the parks' wilderness stewardship mandate to provide resource protection and appropriate visitor services.

An alternative involving replacing the existing stations with new structures was considered. Stations designed and engineered for the setting would minimize environmental impacts necessary to accomplish the project objective. It would allow the park service to more effectively carry out its wilderness stewardship mandate and would enhance wilderness opportunities for users. It would increase efficiencies and extend the parks' ability to provide for visitor enjoyment and safety. New ranger stations on the former stations' existing sites would preserve park and wilderness values and resources for future generations and provide aesthetically pleasing stations in compliance with the parks' *Architectural Character Guidelines*. As such, it is the minimum tool to achieve the goal of having structurally sound and safe ranger stations for providing resource protection and visitor services while being aesthetically pleasing and blending into the natural environment.

An alternative consisting of removing the stations and naturalizing the sites was considered. Though the alternative of removing the cabins would be technically in compliance with the *Wilderness Act* by removing structures from wilderness, it would not provide for optimal wilderness protection activities. It

does not allow for these parks to fully meet the objectives of the *Wilderness Act* or achieve the parks' wilderness stewardship mandate as stated in the BMP. It does not meet the project objectives.

The *Wilderness Act* provides authority to the managing agency to determine whether or not a structure or installation is “necessary to meet minimum requirements for the administration of the area for the purpose of this Act.”

Without the actions of the wilderness rangers and the support these stations provide, enjoyment of the wilderness by the visiting public and protection of the wilderness resource would be compromised. The quality of the wilderness experience and the quality of the wilderness resource would be adversely impacted.

The minimum requirement for managing visitor use and enhancing wilderness enjoyment and resource protection in *park wilderness areas* thus consists of a system of wilderness rangers and stations supported by specific facilities and actions as defined above.

Removal of the stations would result in wilderness rangers starting their patrols from trailheads. They would need to carry all their supplies and equipment for a 5- to 10-day patrol with them. Since distances to the patrol areas covered by these stations are great, patrols of the area would be significantly reduced. There would be no contact point for visitors seeking information or emergency services, reduced maintenance of wilderness camp sites, and winter patrol and snow survey operations would be more difficult and dangerous. Assuming historic wilderness ranger staffing levels of one ranger per station, removing the wilderness ranger stations would reduce visitor services and have long-term moderate adverse effects on wilderness stewardship goals.

STEP 2: DETERMINING THE MINIMUM TOOL

Describe the specific operating requirements for the action. Include information on timing, locations, type of actions, etc.

With some variation, depending on the site, the construction needs and impacts for a replacement station are as follows:

Construction needs and materials would not be significantly different for any of the stations. However, removal of the Rae Lakes station would require less material packed or flown out because the structure is smaller.

The existing two-room Crabtree station would be built somewhat larger than Rae Lakes and Le Conte to accommodate use by snow survey personnel in winter, but would still be within the footprint of the existing station.

Because rebuilding on the existing Le Conte Ranger Station site would cause unacceptable environmental impacts on a potentially significant prehistoric site, the location would be moved to a site 100 feet away. The old site would be rehabilitated. A park archeologist would be on site during all construction and rehabilitation activity.

Specific site conditions would dictate how much digging, fill material, and concrete would be needed, but the differences would be no more than 1–2 cubic yards of fill.

Most of the prefabrication would be done in the frontcountry, leaving only assembly of components in the wilderness. This would reduce the need for power tools and on-site construction time, minimizing disturbance to park visitors' wilderness experience.

Work Sequence

- Demolish existing station.
- Excavate for foundation.
- Pack and fly in materials for foundation, log shell, and framing.
- Pack and fly out old station debris as backhaul.
- Pour foundation.
- Erect new structure shell.
- Pack and fly in furnishings and install.
- Pack and fly out waste materials as backhaul.

Camp, tools, and crew food and equipment

900 to 1,200 pounds of material would be supplied initially. Approximately 200 pounds/week would be supplied thereafter.

Supplies and materials of appropriate size to be brought in by packstock:

150–220 packstock loads of materials to be hauled. Since a mule can carry 150 pounds, and Readymix concrete is packaged in 60-pound sacks, feed for the livestock can be packed in with no additional animals needed.

These materials could be flown, but at a cost of an additional 40–60 helicopter flights during peak season.

Since stock would be tied and fed, temporary stock restraints (e.g., hitching rail, electric fencing) would need to be set up and the site rehabilitated after use. A previously impacted or durable stock restraining site would be used.

Large construction materials and logs and large lumber would be flown in by helicopter.

40–60 helicopter flights would be needed. Flights would be in June or September to avoid high visitor use periods in the backcountry. Approximately two to five flights would be required in June. The remaining flights in September would be done within a 1-week operational period.

Crew size and duration on site

Site visit with construction supervisor and helper: 2 days on site.

Main construction crew: Six to eight crew members, 7 to 9 weeks on site (1 week for set up, demolition, and preparation; 1 week to dig foundation; 1 week to pour foundation; 4 weeks to construct station, furnish, and clean up—extra time for contingencies).

Less time is needed relative to alternative 2 because it is easier to tear down a station and put up a new one than to jack a station up, work under it, and retrofit around existing problems.

Camp location

Crew would camp within 1/4 mile of the sites at existing and previously impacted campsites. The camps would be screened from the main trail and more than 100 feet from water. All minimum-impact regulations and considerations would be followed. The Le Conte crew camp would be surveyed by an archeologist to make sure no impacts on archeological resources occur at the campsite.

Ground disturbance

12–15 cubic yards of material to be excavated for foundation wall trench.

Dirt and gravel not used in construction or fill on site would be evenly spread on similar gravels throughout the area. This is the most natural method of removal, as the site's slope naturally washes gravel downhill throughout the area.

Power tools needed

3.5 kW generator, electric cement mixer, small chainsaw, electric air compressor to run power nailers and roofing staplers.

Generator (ultra-quiet, “inverter” type). Under field conditions, tested noise at full power is equivalent to that of an idling passenger car.

Handheld power tools (electric circular saws, cordless drills). (Whenever possible, hand tools would be used; however, power tools mean significantly shorter work times to complete tasks and so less crew time on site.)

Electric compressors and cement mixer would be used because there are no “quiet technology” gas-powered compressors and cement mixers.

To mitigate noise, the generator would be placed in a sound-insulated enclosure to make it even quieter. The construction work would not be heard beyond about 50 yards.

What is the method or tool that will allow the issue/problem to be resolved or an action to be implemented with a minimum of impacts on the wilderness?

Use of activities or tools normally prohibited in wilderness.

This project does not involve the use of temporary roads, motor vehicles, or motorboats. It does involve the use and landing of helicopters. It does involve the reconstruction of an existing station/structure. Most work would be done by hand, but some power tools would be used.

Materials that are too large or heavy (logs and lumber) would be flown in by helicopter. Selective and limited use of motorized equipment would occur. Motorized equipment use would be limited to a generator to power hand tools, drills, nailers, saws, and a cement mixer and, possibly, a chainsaw.

Steps to minimize impacts on wilderness:

Use of motorized tools and helicopter flights would be limited to between 8:00 a.m. and 5:00 p.m. Visitors would be informed of periods when noise might be an intrusion on their wilderness experience. Rangers and permit-issuing stations would suggest alternative times or routes during the approximately 1-week period when helicopter noise would be an intrusion. The use of motorized tools and landing of

helicopters would lead to impacts, primarily noise and potential of fluid spills. Not using motorized tools and/or helicopters would lead to impacts related to increased use of stock (on trails) and localized impacts at camps from crews remaining on site for a longer period of time.

Why is a replacement structure the minimum tool?

Doing nothing to the existing stations or repairing the stations means more long-term impacts from future maintenance activities, and additional long-term impacts associated with helicopter and stock use. Replacement of the existing stations with more sustainable stations would result in increased impacts in the short term, but reduced impacts in the long term. Replacement stations would result in greater efficiencies and safety for park personnel to more effectively patrol, monitor and maintain resources, and carry out wilderness stewardship and resource education actions.

Why will stock be used?

The presence of stock is recognized as a traditional and historical wilderness use. Stock have long been used to transport personnel and material to remote wilderness areas in Sequoia and Kings Canyon National Parks, even prior to park designation. When stock are used, they are usually tied in one area during the day and then turned loose at night to graze the surrounding meadows and other vegetation. However, under this project, stock would be held within a temporary enclosure (e.g., temporary electric fence) or by using a “high line” strung between trees and the animals tied and spaced evenly along that line. They would be fed weed-free feed (compressed cubes, grain, or pellets).

Why is the landing of aircraft the minimum tool?

Packstock would be used to haul as much of the supplies as possible. They cannot haul items longer than 8 feet or over 150 to 200 pounds (depending on the shape). The log siding and some of the construction material is both too large and too long to be carried by stock; therefore, the use of a helicopter is necessary to support this project.

The BMP, section 5.14.2.2 states, “...helicopters will be used for other administrative support functions in the backcountry. However, this use will be kept to the minimum necessary to protect park resources and will be managed to preserve the solitude of the designated wilderness areas of the parks’ backcountry as required by the Wilderness Act.”

The EA for the BMP, section III.A.9, states “A helicopter is used in many phases of the parks’ management operation, imposing undesirable noises and sights on park visitors. Ranger cabins, trail maintenance crews, research and monitoring crews, are often supplied by helicopters ... Use of the helicopter has an adverse impact on the quality of visitors’ experiences in the backcountry ... It should also be recognized that use of the helicopter, particularly in lieu of stock, reduces impacts to trails, campsites, soils, water, and vegetation in the backcountry.”

Why are power hand tools the minimum tool?

Handheld power tools, such as cordless drills, would be necessary to drill the logs to fasten them together. Mitigation will be to pre-drill and assemble all lumber in the frontcountry to the greatest extent possible. However, final fitting would require minimal use of motorized hand drills, power nailers, staplers, a compressor, and perhaps a chainsaw to adequately construct the structure. An electric cement mixer would also be required to mix the cement for the foundation wall. Mixing the same amount of concrete by hand would mean a significantly increased time for crew to be on site at each project, and would result in increased use of helicopter and stock to support them with more supplies.

Why is a chainsaw the minimum tool?

First choice for accomplishing work would be the use of non-motorized hand tools. If these prove impractical for safety or other considerations, then power tools may be used. A chainsaw may be used to cut one or two small (trunk under 8 inches dbh) trees that may interfere with the station's site layout. A chainsaw may also be used to make the final cuts of notches when placing the log siding. All logs would be pre-notched and fitted in the frontcountry, but final fitting may require the use of the chainsaw if adjustments are needed.

What are the effects of using the above tools?

Describe the biophysical effects/benefits:

The incidental cutting of branches during construction might have negligible adverse effects on vegetation and wildlife habitat. Using motorized hand tools and a helicopter would have short-term and minor to moderate adverse impacts on wildlife from flight response from the immediate work area. Using motorized hand tools would have a minor short-term adverse effect on the wilderness quality of natural sounds in a place where mechanical sounds are not normally heard. This would adversely affect the wilderness experience of visitors in the immediate area. Disposing of construction waste water from cement mixing inside the foundation walls would have a negligible and short-term adverse effect on water quality. Using motorized tools for the project would have a short-term and beneficial effect by shortening the time crews would have to stay in the area for construction. This would mean fewer packstock trips to support them. Packstock graze the parks' meadows and their hooves cause mechanical disturbance on trail tread. Reducing those impacts is a benefit of some power tool use. Helicopter use would have a moderate and short-term adverse effect on visitors' wilderness experience by disturbing the wilderness quality of silence and wilderness character as a place where mechanical sounds are absent.

Having fuel for gasoline-powered engines (chainsaw and generator) is accompanied by the risk of accidentally spilling small amounts of it during refueling. There is also a remote risk that bears could bite into the containers, spilling larger quantities. Mitigation steps, such as using metal boxes for storage, will be implemented.

Describe the social/recreation effects/benefits:

Using power tools in the wilderness would likely have a short-term adverse social effect for visitors in the area during construction. Using power tools decreases work time on site, resulting in fewer crew resupply trips by packstock. Carrying out construction activities, power tool use, and helicopter resupply during times of the day when visitor use is lowest and increasing visitor education about the project is intended to mitigate these effects. The long-term recreational effect of having a more effective and efficient ranger station to serve the public and protect and monitor resources would be positive. There may be adverse effects on visitors who do not want to see structures in wilderness.

Describe societal/political effects/benefits:

There could be adverse social effects from the use of motorized equipment in the wilderness. Visitors who were unhappy about it could complain to the work crew or to management. Some visitors may see having a structure and a ranger as "confinements" on their opportunity to experience "unconfined recreation." Long-term social effects of having effective and efficient ranger stations would be positive, as they would serve to enhance wilderness stewardship goals of visitor education, visitor emergency services, and more efficient resource protection and monitoring.

Describe health and safety concerns/benefits:

Using a helicopter to bring in the log siding and other heavy material is a safety concern, and long logs can be a difficult load. Packstock can injure people by knocking them over, stepping on or kicking them. Chainsaws, axes, and draw knives can injure people by cutting them. Lifting heavy material such as bags of cement can cause strain injuries.

The existing stations present health and safety hazards to station users, especially in winter. They were not designed for snow loads or for safe and fast exit in the event of an emergency in winter. Stations engineered for the snow loads of the environment and with adequately sized and accessible exits above the snow level (a snow door at the roof peak) would increase safety for winter use.

The ranger stations under consideration have been critical contact points for visitors seeking help in an emergency or when needing safety information about environmental conditions. Historically, the presence of these ranger stations has allowed faster response and the timely delivery of safety information to the public. The existence of Le Conte, Rae Lakes and Crabtree ranger stations and the linked presence of rangers save at least one to three lives per year.

Describe economic and timing considerations/benefits:

Use of motorized equipment would expedite this project, and make it possible to complete it in one to two seasons per station. Weather permitting, and depending on which alternative is adopted, construction or removal would require a minimum crew of four to six people for between 9 and 12 weeks. Completing the project quickly minimizes impacts on wilderness and offsets the impacts of a larger construction crew.

Describe heritage resource considerations/benefits:

Traditionally, ranger stations in the Sequoia and Kings Canyon wilderness were built using logs of native timber. Constructing cabins using this method is a traditional skill. There are only a few people in the parks who still know how to do this. Although the trees used for siding would be from commercially obtained sources and pre-notched, the skill of building a log cabin is one that should be preserved.

Develop and describe any mitigation measures that apply.

Under the direction of the parks' plant ecologist, meadows would be monitored by the area ranger to make sure that unacceptable environmental impacts on meadows are not occurring as a result of grazing (removal of biomass) or mechanical impacts on meadow sod or stream banks. Where established criteria show that unacceptable environmental impacts are occurring or would soon occur, the area would be limited or closed to stock.

Sequoia and Kings Canyon National Parks' packstock operations are subject to the same minimum impact standards and grazing regulations as general park users. In addition, for each station, the parks' plant ecologist would survey the areas where stock would travel or be held and write a site-specific grazing plan for construction operations. The site-specific grazing plan would outline mitigation measures and best management practices to be used to reduce environmental impacts as a result of stock use.

Mitigation measures for helicopter use would include:

Helicopter use would be guided by minimum tool determinations and best management practices.

Use would be limited to the absolute minimum necessary to bring in and carry out material and

debris that is too large for packstock to carry or when packstock are determined to be inappropriate based on the previous guidance.

If possible, flights would be scheduled before and/or after the peak visitation periods of July and August.

Flights would occur only between 8:00 a.m. and 5:00 p.m. and would follow the same flight path to and from the project sites.

Park staff would inform hikers of possible noise intrusions, when they would occur, and alternative routes or times visitors can use to avoid the noise. Park staff would inform visitors camping near the construction and landing areas of flights and construction activities.

Rae Lakes bighorn sheep use area: The parks' wildlife biologist would provide a map of known bighorn sheep areas, and the helicopter would avoid those areas; the final approach to the landing zone would stay below the area of the historic sightings. Flights would be suspended if sheep are observed within 1/2 mile of the construction area. The landing zone for the helicopter would be located approximately 500 feet from an area where sheep have been observed.

Other wilderness mitigation:

The maintenance supervisors and crew leader would select a previously impacted site for project base camps.

All crews would be instructed in and expected to use "Leave No Trace" and minimum-impact camping practices.

Approved food storage boxes would be provided for the construction area and crew camp.

Crew camps would be located at previously impacted areas with minimum potential to disrupt wildlife habitat or habits.

No motorized equipment would be used in camps. A propane/white gas or battery-powered lantern would be used to light the cooking area inside the cook tents. All other light would be from personal flashlights and headlamps.

Supervisors would ensure that group noise levels do not disturb nearby campers.

Construction activities would be planned to minimize or eliminate any procedure that might displace normal visitor access or impact on the visitor wilderness experience.

Construction would be done only between 8:00 a.m. and 5:00 p.m.

During construction periods, wilderness visitors would be informed of construction activities. This would occur through the permit issuance process, wilderness rangers on the trail, and other educational contacts. Where possible, visitors would be told of alternative routes and times to avoid these noise intrusions.

An ultra-quiet generator would be used and turned off when it is not in use.

To reduce the need for power tools on site, most of the cutting and drilling of the structure would be done in the frontcountry prior to transport to the project sites. On-site use of power tools would

be kept to a minimum and used only where hand tools cannot achieve the same result in a minimum amount of time.

All areas impacted as a result of removal/construction activities would be rehabilitated.

Approvals and Routing:

Ken Handrich 5/14/10
Prepared/ Submitted by: Date
(program manager)

Ken Handrich 5/14/10
Recommended by (Division Chief) Date

Kenneth H. Hodge 05/18/10
Approved by (Superintendent) Date

