Chapter 4: Environmental Assessment (EA# CA-AR-09-03)

4.1 Introduction

4.1.1 Readers Guide

This Environmental Assessment (EA) is to be used in conjunction with the wilderness management plan Chapters 1–3. Certain information required for the EA process is already contained in those chapters and will be referenced in this chapter to avoid duplication.

4.1.2 Background and Setting and Planning Area Decision

The background for this proposed action is described in Chapter 1, Sections 1.3 through 1.6.

The planning area includes 45,093 acres of BLM managed lands as described in Chapter 1 and shown in Figure 1-1

4.1.3 Purpose and Need for Action and Decision to be Made

The purpose is to develop a management plan for the King Range and Rocks and Islands Wilderness Areas to ensure that they are administered in a manner that is consistent with the Northern California Coastal Wild Heritage Wilderness Act, the Wilderness Act, and the King Range Act. This planning effort is needed to supplement the existing King Range RMP to provide wilderness-specific management direction. This plan is narrow in scope and only addresses objectives and actions directly related to wilderness management. This plan will decide what actions the BLM should take to protect the area's wilderness character and how to manage various public uses to meet the requirements of the Wilderness Act.

4.1.4 Conformance with Land Use Plan and Northern California Coastal Wild Heritage Wilderness Act

Background regarding the King Range RMP and the California Coastal Wild Heritage Wilderness Act can be found in Chapter 1.

This EA has been developed to supplement and update guidance in the King Range RMP to reflect the requirements of wilderness designation. This plan is intended to be used in conjunction with the King Range

RMP to guide management. For example, the King Range RMP analyzed specific recreation group size limits for recreation visitors to protect the area's wilderness character. These are an integral part of wilderness protection but are not reanalyzed in this document. Portions of this plan reference decisions made in the King Range RMP to provide a full context of actions that would be taken to protect wilderness character.

The CCNM RMP also contains direction for management of the rocks and islands within the monument to protect wilderness character. The CCNM RMP is consistent with designation of the Rocks and Islands Wilderness

4.1.5 Relationship to Statutes, Regulations and Other Plans

The primary laws directing management of the King Range Wilderness and Rocks and Islands Wilderness are the Wilderness Act and the Northern California Coastal Wild Heritage Wilderness Act. The Wilderness Act provides direction for management of all areas within the National Wilderness Preservation System. Regulations to manage wilderness are in 43 CFR 6300. BLM Manual and Handbook 8560, "Management of Designated Wilderness Areas," provides agency-wide guidance for wilderness management and planning. The Northern California Coastal Wild Heritage Wilderness Act includes area-specific direction for the King Range Wilderness. The King Range Act (P. L. 91-476) provides overall authority and direction for BLM management of all lands within the boundary of the King Range NCA. Section 3.11 (B) of the Northern California Coastal Wild Heritage Wilderness Act states "With respect to the wilderness designated by subparagraph (A), in the case of a conflict between this Act and Public Law 91–476 (16 U.S.C. 460y et seq.), the more restrictive provision shall control."

4.1.6 Scoping and Issues

A public scoping period was held from December 5, 2008 through January 23, 2009, as part of the planning process. Fourteen public comments were received and analyzed as part of this process. A summary of the planning issues that were developing through public scoping comments is provided in Section 1.6. A more detailed discussion of issues raised during the scoping process can be found in Appendix A.

4.2 Proposed Action and Alternatives

4.2.1 Proposed Action – Wilderness Management Plan

Refer to Chapter 3 of this document for the complete text of the proposed wilderness management plan. The proposed plan emphasizes the need to maintain and enhance wilderness character. Maintaining opportunities for solitude and primitive recreation is a high priority, which is reflected through a variety of proposed strategies to manage visitor use. The plan outlines actions to maintain natural, indigenous ecosystems through management of vegetation, fire and fuels, and visitor use. The proposed plan also provides specific direction for the management of livestock grazing, land-use authorizations, cultural resources, and wildlife to restore or maintain wilderness character.

4.2.2 No Action Alternative – Continued Management Under Current Direction

4.2.2.1 Introduction

The no action alternative represents management that would occur without preparing a Wilderness Management Plan. It is presented as a baseline for comparison to the proposed action. Direction for this alternative is derived primarily from the King Range RMP and CCNM RMP along with law and policy requirements of the areas under the Wilderness Act and the California Coastal Wild Heritage Wilderness Act. In some cases the no action alternative may represent a more intensive management approach than the proposed action. Although the no action alternative is substantially similar to the proposed action, the no action alternative does not provide a comprehensive set of actions designed to protect and manage wilderness character. Rather, individual actions would be planned and evaluated on a case-by-case basis consistent with protection and management of wilderness character.

4.2.2.2 Management Actions to Maintain or Achieve Naturalness

Management of the coastal scrub and chaparral ecosystems, the coastal beach and intertidal zone, forest ecosystems, rivers and streams, and infection and disease would be the same as described for the proposed action.

Grassland Management

Under the current management direction, the use of prescribed burns would not be used as a tool to shape and maintain the distribution and extent of grassland, coastal scrub and chaparral plant communities.

Native grass enhancement would not occur. The use of motor vehicles for such projects would not be necessary.

Fire and Fuels Management

Fire suppression activities under the current management direction would be similar to the proposed action except that the heavy equipment exclusion area would not be established.

Fuel breaks would be maintained in the same areas and using the same methods as described under the proposed action, including direction to use prescribed fire to maintain fuel breaks along wilderness boundaries.

Invasive Plant Species

Under the current management direction, prevention, education, inventory, mapping and treatment of weeds would continue, but would not take the proactive strategy of treating newly discovered infestations within 1 year of being reported. There would also be no plan direction to contain the pampas grass infestation to areas south of Big Flat. Further, there would be no plan direction on the use of genetically local native plants to restore previously invaded sites if needed to prevent reinvasion by invasive weeds.

4.2.2.3 Management Actions to Maintain or Achieve an Undeveloped Quality

Management of private inholdings and edgeholdings, and life estate properties would be the same as described for the proposed action.

Livestock Grazing Management

Grazing management would continue with lessee access managed under the guidance of the Congressional Wilderness Grazing Guidelines without additional guidelines or criteria for motorized access (Appendix B). New range improvements would be considered on a case-by-case basis and require an environmental analysis as needed for the maintenance of rangeland health and protection of wilderness character. Furthermore, the current management direction does not require an annual, face-to-face meeting with lessees to review operating plans and coordinate range improvement maintenance.

Private Land (Inholding and Edgeholding) Access

Management of private inholdings and edgeholdings, and life estate properties would be the same as described for the proposed action.

Rights-of-Way

The current management direction is similar to the proposed action, except that proactive efforts would not be made to work with existing ROW holders to relocate facilities to areas outside of the wilderness.

4.2.2.3 Management Actions to Maintain or Achieve Solitude or Primitive and Unconfined Recreation Opportunities

Visitor Access

Under the current management direction, an interim backcountry permit system was initiated in 2006, which required all overnight visitors to obtain a permit for use of the wilderness. The permit program has provided detailed visitor use information on which to base allocation decisions. Also under the current management direction, a visitor use allocation plan would be implemented to ensure that a moderate level of solitude would be available to meet the objectives of the King Range RMP. However, no specific allocation system has been proposed to date, which has allowed for increased visitor use since wilderness designation. Use limitations under this alternative would be less stringent than those identified in the proposed action.

To meet the objectives for solitude in the King Range RMP, a visitor allocation system would be implemented in the same manner as the proposed action, except that daily use allocations would be higher — 100 starts (people) per day during the peak season and 50 starts per day during off-peak times. Use allocations would be slightly lower than current use levels.

SRPs would be authorized at times and for locations consistent with group size, trailhead, and campsite restrictions that were established by the King Range RMP. No additional restrictions would be placed on the amount of SRP use.

Managing Visitor Impacts

The current RMP direction included objectives to maintain the primitive and natural conditions of the backcountry by implementing a facilities-driven approach to mitigate human caused impacts, such as improper human waste disposal, campsite development, and food storage.

Latrines would be installed at high use backcountry camping areas where other efforts are ineffective at reducing the proliferation of human waste.

Visually unobtrusive bear-proof food storage systems would be developed at popular sites where bear encounters are a persistent problem,

and where frequent group layover days make it difficult for one bear canister per person to hold enough food for an entire trip.

Standards for campsite impacts would not be established under the no action alternative. Campsite impacts and large-scale shelters would be addressed on a case-by-case basis.

Geocaching would not be restricted under the no action alternative.

Recreation Facilities

Current management direction placed greater emphasis on the development of recreation facilities when compared to the proposed action.

A new, 4 mile hiking trail would be developed to provide a connection between Lightning Trailhead and the Miller Loop in the Honeydew Creek watershed. Refer to Figure 4-1 for the specific location of the proposed trail route.

A new trail would also be developed through Mill Creek Area of Critical Environmental Concern to create a connection between Lighthouse Road and the LCT via Cooskie Creek Trail. Work with partners to deliver interpretive programs and information to promote the protection of Mill Creek's sensitive resources. Refer to Figure 3-6 for the proposed trail location.

New drinking water sources may be developed to facilitate backcountry use and to support new campsite developments.

Public Information and Management Presence

The King Range has an extensive outreach and education program that serves visitors, local schools and other educational organizations. Under the current management direction these programs would continue.

Wilderness Search and Rescue

Management of SAR operations would be similar to the proposed action, except that training using a wheeled-stretcher would not be permitted. Additionally, coordination with SAR organizations and agencies would be on a case-by-case basis. No coordinated efforts would be undertaken to determine appropriate rescue practices based on search urgency.

4.2.2.4 Management in Support of Unique/Supplemental Values

Management of Native American values and threatened and endangered species would be the same as under the proposed action.

Cultural Resource Management

The current management direction for cultural resources would be similar as described under the proposed action, except that the historic orchard in Hidden Valley would not be maintained. Known sites would be monitored and stabilized as necessary to protect their eligibility for listing on the National Register of Historic Places. Use of mechanized tools would be authorized through independent, case-by-case environmental analysis.

Research

A research permit program would not be developed under the current management direction. Research projects would require approval by the authorized officer on a case-by-case basis. The national BLM NLCS Research Permit and Reporting System would be implemented within the wilderness when it is finalized.

4.3 Affected Environment

The baseline information used for determining the potential impacts are the current resource conditions described in Chapter 2 of this document.

4.4 Environmental Effects

This section evaluates potential environmental impacts that could occur to the natural and human environment of the wilderness areas from implementing the proposed action and no action alternatives. An impact is defined as a modification of the existing environment that is brought about by an outside action. Potential impacts considered in this chapter include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historical, cultural, economic, social, and health impacts (40 Code of Federal Regulations [40 CFR] 1508.8).

This section is organized by resource program and contains potential impacts that could result from implementing the objectives, allowable uses, and management actions under each of the alternatives. The primary effects are described within the context of the qualities that contribute to wilderness character: naturalness, undeveloped condition, opportunities for solitude or unconfined, primitive recreation, untrammeled quality, unique and supplemental values.

Note to Readers: The environmental impacts described below are limited to those effects caused by discretionary actions considered by the BLM under the proposed action and no action alternatives of this plan.

Impacts related to wilderness designation itself (a Congressional action) or implementation of actions required under national regulations are not analyzed, as their implementation is not under the discretion of local managers.

4.4.1 Approach to the Analysis

The detailed impact analyses and conclusions are based on the BLM planning team members' knowledge of resources and the project area, reviews of existing data and literature, as well as information provided by experts from other agencies, interest groups, and concerned citizens. Data from field investigations were used to quantify effects where possible. However, in the absence of quantitative data, qualitative information and best professional judgment was used. Acreage calculations, projected use levels, and other numbers used in this analysis are approximate and provided for comparison and analytic purposes; they may not reflect exact measures of on-the-ground situations. Measures designed to avoid or reduce impacts were incorporated into the management alternatives and supporting information in the appendices, so impacts in this chapter are considered unavoidable and would result from implementing the management actions. If an activity or action is not addressed in a given section, no impacts are expected or the impact is expected to be negligible, based on existing knowledge.

4.4.2 Effects of No Action Alternative

The King Range RMP proposed a variety of objectives and management decisions to maintain and restore natural conditions in the King Range. The no action alternative would implement priority decisions for managing the backcountry zone. Impacts from decisions made in the King Range RMP are contained in the Final Environmental Impact Statement. In cases where no specific actions have been proposed, this section will contrast impacts between the current management direction and the proposed action, which contains more specific implementation strategies. When compared to the proposed action, the no action alternative contains less specific direction and would likely be less effective in managing for wilderness character. Throughout this section the terms "no action" and "current management direction" will be used interchangeably to refer to the current management under the King Range RMP.

4.4.2.1 Summary of Impacts to Wilderness Character

Naturalness

A variety of ongoing resource and visitor management programs would enhance naturalness. However, when compared to the proposed action, these efforts would be less effective in treating known resource impacts or in preventing future impacts to naturalness. For example, ongoing management of invasive plants would continue to restore and prevent future infestations by non-native plants, but would not include a proactive approach of treating new infestations within a year of discovery, which may hinder eradication efforts in the long-run. Additionally, impacts to naturalness would be expected to increase along backcountry trails and camping areas due to increasing visitor use. Without establishing restraints to fire equipment use, impacts to naturalness would continue and may result in impacts to previously undisturbed areas within the proposed heavy equipment exclusion area. Collectively, larger areas of wilderness would remain in an unnatural state and would remain vulnerable to impacts associated with non-native species, livestock use, fire management, and visitor use.

Undeveloped Character

The current management direction would allow for projects and uses that create impacts to the undeveloped character over time. The current management direction would retain existing structures and may also lead to increased mechanization along motorized access routes over time. A variety of projects to manage for visitor use impacts and provide additional trail opportunities would also create new permanent developments within wilderness. Overall, the no action alternative would allow for more development and mechanized use of the wilderness, which would degrade undeveloped character.

Opportunities for Solitude or Primitive and Unconfined Recreation

There are substantial differences between the proposed action and no action alternatives in terms of facilities and visitor use management. The no action alternative would allow for a greater level of development, such as installation of food storage boxes and latrines, when compared to the proposed action. The no action alternative would also allow for greater levels of visitation, which would result in loss of solitude and increasing visitor impacts. While the level of recreational development would detract from wilderness character, opportunities to participate in an unconfined type of recreation would not be diminished to the same extent compared to the proposed action. Higher permit quotas would allow more visitors to obtain a permit for use of the wilderness. Other

actions that would impact the unconfined recreation experience, such as requiring the use of designated campsites, or requiring visitors to pack out human waste, would not be implemented under the no action. In summary, the no action alternative would continue to provide for current levels of primitive and unconfined recreation without additional constraints to visitors, but may sacrifice the quality of the experience by compromising solitude and campsite conditions.

Untrammeled Character

Overall, trammeling impacts would be less under the no action alternative when compared to the proposed action, since very few specific management actions are proposed within wilderness. However, by not proactively addressing noxious weed infestations or conifer encroachment through numerous small-scale projects, larger, more intensive treatments may be necessary in the future in order to prevent deterioration of natural conditions. Larger, more intensive treatments could have a greater trammeling effect than smaller, more numerous treatments. The no action alternative would likely require long-term trammeling actions to restore naturalness, while most trammeling actions under the proposed action would occur within the first 5–10 years and would decrease in the future.

Unique or Supplemental Values

Impacts on unique and supplemental values would be the similar as those described for the proposed action, but would not provide the same level of protection for sensitive resources. For example, there would be potentially greater impacts from the current livestock grazing system and increasing visitor use under the current management direction. When compared to the proposed action, the current management direction would be slightly less effective in evaluating, testing and stabilizing sensitive cultural sites, since the efficiencies gained through proactively authorizing the use of ground-penetrating radar technology would not be afforded. In a highly dynamic physical environment, the use of ground-penetrating radar may better prevent the loss of sites and important information they contain about the prehistoric and historic uses of wilderness.

4.4.2.2 Detailed Analysis of Affects on Wilderness Character

The following section details the potential impacts to wilderness character from implementation of the no action alternative. Impacts to naturalness, undeveloped character, opportunities for solitude or primitive and unconfined recreation, untrammeled quality, and unique and supplemental values from various management actions are organized by

program area (e.g., grassland management, fire and fuels management, etc.).

4.4.2.2.1 Impacts from Grassland Management Actions

Impacts on Naturalness

The current management direction would not provide for active restoration of coastal prairies. For instance, there is no specific decision to reintroduce native grasses and forbs into the coastal prairies, which could result in continued domination by non-native species. Additionally, without active management to remove conifer seedlings, coastal prairies would be allowed to convert to forest stands through conifer encroachment. If natural wildfire does not set back succession, prairies would be reduced by another 10–20 percent over the life of the plan.

Impacts on Undeveloped Character

Short-term impacts would be expected where mechanical or motorized vehicles are used to transport materials or plants to project sites within wilderness. All mechanized use associated with restoration projects would utilize existing routes where motorized use is authorized for other uses (e.g., Smith-Etter Road). Impacts would be limited to the times when mechanical or motorized vehicles would be operating in the wilderness.

Impacts on Opportunities for Solitude or Primitive and Unconfined Recreation

Current management guidance to maintain or achieve conditions of naturalness would have very little impact to opportunities for solitude or primitive and unconfined recreation. Short-term, site specific impacts to solitude may be expected due to the presence of field crews conducting inventory, monitoring, rehabilitation or research.

Impacts on Untrammeled Character

No impacts are expected to untrammeled character.

Impacts on Unique and Supplemental Values

No impacts are expected to unique and supplemental values.

4.4.2.2.2 Impacts from Fire and Fuels Management

Impacts on Naturalness

Impacts to naturalness from fire and fuels management result primarily from suppression actions, with the exception of fuel break maintenance along the wilderness boundary. Construction of fire lines, staging

areas, temporary camps, safety zones and landing areas would continue to impact naturalness through direct impacts to soils, vegetation and hydrology. Continued surface disturbance from suppression activities would increase the chance of introducing or spreading non-native, invasive plant species at a greater level than under the proposed action. Continued fire suppression could also perpetuate unnatural fuel loading conditions and may increase prairie to forest conversion. Impacts resulting from the use of mechanical equipment would be greater when compared to the proposed action, since no heavy equipment exclusion area would be adopted under current management. Ongoing efforts to maintain fuel breaks along the wilderness boundaries may reduce the need for direct fire suppression within wilderness, similar to the proposed action.

Up to 360 acres annually could be affected by prescribed burning along the existing fuel break system. Smoke generated from prescribed burning to establish or maintain fuel breaks would impact air quality during project implementation. Some tree and brush cutting in this area, as well as employment of a more frequent burn regime to keep fuel levels lower would result in minor impacts to naturalness. However, overall it would improve naturalness in the wilderness by reducing the need for new fire line development.

Impacts on Undeveloped Character

Fire management activities would continue to impact the undeveloped character at present rates, due to the continued construction of new fire lines, temporary fire camps, staging areas, access routes, and landing zones. However, impacts resulting from the use of mechanical equipment may be greater when compared to the proposed action, since no heavy equipment exclusion area would be adopted under current management. Ongoing efforts to maintain fuel breaks along the wilderness boundaries, may reduce the need for direct fire suppression within wilderness, similar to the proposed action.

Impacts on Opportunities for Solitude or Primitive and Unconfined Recreation

Impacts to solitude and visual resources would also be expected due to ongoing fire suppression and fuels management activities.

Impacts on Untrammeled Character

Impacts to the untrammeled character would occur as a result of ongoing fire management activities. Trammeling impacts would be greater or would occur over a greater geographic area in the absence of a heavy

equipment exclusion area. Direct trammeling actions associated with maintaining fuel breaks would be the same as described for the proposed action.

Impacts on Unique and Supplemental Values

Potential impacts to cultural resources or sensitive habitats would be greater than those described for the proposed action, due to continued equipment use within the proposed "heavy equipment exclusion area" for fire suppression activities.

4.4.2.2.3 Impacts From Invasive Plant Species Management

Impacts on Naturalness

Impacts to naturalness would be similar to those described for the proposed action, since both alternatives include active management of invasive species. However, the no action alternative does not provide direction to treat newly discovered infestations within a 1 year timeframe, which could result in the spread of existing infestations and the establishment of new infestations in surrounding areas. In addition, without specific direction to contain pampas grass, existing infestations may move into new areas north of Big Flat. Increasing size and distribution of non-native species would diminish naturalness through the loss of native habitat and plant communities.

Impacts on Undeveloped Character

No impacts are anticipated to undeveloped character.

Impacts on Opportunities for Solitude or Primitive and Unconfined Recreation

No impacts are anticipated to opportunities for solitude or primitive and unconfined recreation.

Impacts on Untrammeled Condition

Treatment and eradication of invasive plant species would create trammeling impacts in wilderness. Trammeling impacts would be less frequent, but more intensive when compared to the proposed action, which would take proactive approach to addressing newly discovered infestations. By not addressing weed infestations expediently, weed patches may become larger and require more intensive eradication efforts.

Impacts on Unique and Supplemental Value

No impacts are anticipated to unique and supplemental values

4.4.2.2.4 Impacts From Livestock Grazing Management

Impacts on Naturalness

Impacts to naturalness would continue at present levels under the current management direction, since cattle distribution would not be improved through the development of a new water facility.

Impacts on Undeveloped Character

Under the no action alternative, a new water development would not be constructed at Commodore Flat, which would retain undeveloped conditions at that site. New protective stipulations would not be added to livestock grazing permits to minimize impacts from motorized or mechanized use by lessees, which would allow for current levels of mechanization within wilderness.

Impacts on Solitude or Primitive and Unconfined Recreation

Current levels of grazing use on the Mackey Pasture of the Spanish Flat Allotment would continue to impact recreation opportunities due to the presence of cattle and associated impacts along hiking trails.

Impacts on Untrammeled Character

Continued maintenance of access routes and facilities, such as water developments, would perpetuate trammeling impacts.

Impacts on Unique and Supplemental Values

Potential impacts to cultural resources would be greater under the no action, due to continued current patterns of grazing use in the Spanish Flat Allotment.

4.4.2.2.5 Impacts From Private Land (Inholding and Edgeholding) Access

Impacts on Naturalness

Maintenance of Kinsey Ridge Trail for year –around passage of four-wheel drive vehicles, including the occasional rebuilding of a stream crossing at Kinsey Creek will perpetuate impacts to soils, vegetation, and hydrologic function.

Impacts on Undeveloped Character

Roads maintained for four-wheel drive vehicles would be retained as permanent developments.

Impacts on Solitude or Primitive and Unconfined Recreation

Visits to private parcels would impact solitude or primitive and unconfined recreation opportunities. Impacts would vary depending on timing, duration, and number of visitors.

Impacts on Untrammeled Character

Continued maintenance of roads would perpetuate trammeling impacts.

Impacts on Unique and Supplemental Values

No impacts are anticipated on unique and supplemental values.

4.4.2.2.6 Impacts From Management of Rights-of-Way

Impacts on Naturalness

Management and maintenance of ROW would perpetuate impacts to vegetation, soils and hydrologic function.

Impacts on Undeveloped Character

Under the no action alternative, the two rights-of-way for scientific instruments would not be relocated to areas outside of wilderness. This would retain permanent developments on approximately one acre within wilderness

Impacts on Solitude or Primitive and Unconfined Recreation

Minor impacts would persist under the current management direction. Operation and maintenance of the existing instruments may create short-term, site specific impacts to solitude and visual resources.

Impacts on Untrammeled Character

No impacts are anticipated to untrammeled character

Impacts on Unique and Supplemental Values

No impacts are anticipated to unique and supplemental values.

4.4.2.2.7 Impacts from Wilderness Recreation Management (Visitor Access, Managing Visitor Impacts, Recreation Facilities, Public Information and Management Presence, and Wilderness Search and Rescue)

The impacts of these programs are similar and interdependent in nature; therefore the impacts from these programs have been grouped together.

Impacts on Naturalness

Greater levels of visitor use would be allowed under the no action alternative, which could result in a variety of impacts to naturalness. Most

impacts would center on campsites and popular camping areas. Direct impacts would occur at greater levels, commensurate with increasing use. For example, greater amounts of human waste would be introduced to the water through intertidal burials and improperly buried waste. Increased habituation of wildlife could result from increasing instances of improperly stored food, but may be reduced in areas where bear-resistant storage containers are installed. Crowded conditions would be expected to result in the development of new campsites, which would impact native plant communities, soils, and wildlife habitat in small areas primarily adjacent to existing camping areas. Increasing visitor use also raises the potential for wildfire and the impacts to naturalness that may occur during suppression of wildfire.

Impacts on Undeveloped Character

The current management direction for recreational facilities would include the installation of food storage lockers and latrines at backcountry camping areas. These developments would diminish the undeveloped character by creating several permanent structures within wilderness. Maintenance and operation of the facilities may also require the use of mechanical or motorized equipment, which would create increased mechanization of wilderness.

The no action alternative would develop a new hiking trail to connect the Lightning Trailhead to the Miller Loop and retain the existing trail north of the King Range Road terminus. This action would create new trails and retain an existing trail in an otherwise undeveloped area.

A new trail in the Mill Creek watershed would also create new permanent developments in wilderness. The trail would utilize a combination of new trail and existing roads and trails along Prosper, Johnny-Jack, and the HJ ridges. Approximately 4 miles of new trail bench would be constructed where existing roads cannot be used. Interpretive materials would be disseminated off-site, which would not impact the primitive, undeveloped setting of the wilderness.

Search and rescue operations would continue to create mechanization of wilderness at current levels.

Impacts on Solitude or Primitive and Unconfined Recreation

Current direction for managing visitor access, impacts, facilities and outreach opportunities would have beneficial impacts to recreation opportunities, but would not provide for the same level of solitude or unconfined recreation as under the proposed action.

Limiting the number of starts to 100 people and 50 people per day for peak season and off-season respectively, would provide improved levels of solitude when compared to the existing condition. The largest peaks in visitation would be reduced, which would prevent escalating impacts to solitude during peak times. The quality of the recreation experience would still be impacted by the number of people in the backcountry, since 100 starts per day could lead to crowded conditions during peak weekends in the summer. The current management direction would provide fewer opportunities for solitude when compared to the proposed action.

New recreation opportunities would be provided within wilderness by constructing new trails in the Honeydew Creek and Mill Creek watersheds. Developing interpretive materials and programs for the Mill Creek trail would enhance educational and interpretive opportunities. Opportunities for self-discovery and challenge would be diminished in these areas.

Impacts on Untrammeled Character

Continued maintenance of backcountry trails, removal of hazard trees in campsites, and maintenance of spring developments for drinking water would continue to have trammeling impacts under the current management direction. These impacts would be similar to those described for the proposed action, but would be slightly greater since one additional trail and another existing trail (Honeydew Creek watershed) would be maintained under the no action that would not under the proposed action. Impacts from trail development in Mill Creek ACEC would be the same as described for the proposed action.

Impacts on Unique and Supplemental Values

Incidental discovery and removal of artifacts and direct impacts from new campsite development and hiking use would be greater under the no action alternative, because a greater number of visitors would be permitted to use the area.

4.4.2.2.8 Impacts From Management of Cultural Values

Impacts on Naturalness

No impacts are anticipated on naturalness.

Impacts on Undeveloped Character

Impacts to the undeveloped character would be similar to the proposed action, with the exception of Punta Gorda Lighthouse. There is no current management direction to relocate the existing interpretive sign to

the inside of the lighthouse building, which would retain the existing footprint of the lighthouse facilities.

Impacts on Solitude or Primitive and Unconfined Recreation

Impacts to solitude and the visitor experience could be slightly greater than those described for the proposed action, because cultural work under the current management direction would not benefit from the efficiencies of using mechanized tools, such as ground penetrating radar, which would reduce crew time spent in the wilderness.

Impacts on Untrammeled Character

Fewer trammeling impacts would be expected under the no action alternative, since the use of wheeled equipment would not be authorized.

Impacts on Unique and Supplemental Values

Ongoing monitoring and inventory programs would continue to provide information on the condition and distribution of cultural resources.

4.4.3 Effects of Proposed Action

4.4.3.1 Summary of Impacts to Wilderness Character

Naturalness

A proactive direction for managing grasslands and native plant communities, visitor use, wild fire, and addressing resource impacts would enhance naturalness in many areas of the wilderness. Specific impacts are described under the, "Impacts to Naturalness," headings in the following sections.

Undeveloped Character

A variety of actions are proposed to manage authorized uses within the King Range Wilderness. There would be a net reduction in the level of development and mechanization within wilderness due to careful management of mechanized access, fire suppression and fuels reduction, relocation and removal of human developments and trail management decisions.

Opportunities for Solitude or Primitive and Unconfined Recreation

The proposed action would maintain and improve opportunities for solitude or primitive and unconfined recreation. Decisions for managing

visitor access, facilities and impacts would provide greater opportunities for solitude and the opportunity to experience a natural, undeveloped setting.

Untrammeled Character

Management actions to restore natural plant and animal communities, conduct fire management activities, provide recreation opportunities, and manage sensitive cultural resources would create trammeling impacts. The proposed plan would implement several short-term projects to achieve naturalness and allow for authorized uses. Although trammeling actions would increase as compared to the no action alternative, implementation of proactive projects would result in fewer trammeling actions by creating conditions that more closely mimic natural conditions.

Unique or Supplemental Resources

Management direction in the proposed action to protect important cultural resource sites, native traditions, sensitive wildlife species, and to develop a strategic research program would enhance unique resources of the wilderness.

4.4.3.2 Detailed Analysis of Affects on Wilderness Character

The following section details the potential impacts to wilderness character from implementation of the proposed action. Impacts to the five wilderness character qualities from various management actions are organized by program area (e.g., grassland management, fire and fuels management, etc.).

4.4.3.2.1 Impacts from Grassland Management

Impacts on Naturalness

Small scale manipulations, such as replanting native grasses and forbs, and treating conifer encroachment, are an attempt to replicate large-scale disturbance that would naturally result from a combination of wildfire and Native American burning. Successful implementation would help maintain natural grassland conditions on about 5,000 acres.

Impacts on Undeveloped Character

Transportation of grass plugs or seedlings to project sites within wilderness by motorized or mechanized vehicles would create short-term impacts (e.g., vehicle tracks, visual impacts, noise) to the undeveloped

character. Such impacts would be infrequent, would only occur during project implementation, and only on the routes identified in Figure 2-12.

Impacts on Opportunities for Solitude or Primitive and Unconfined Recreation

The presence of monitoring, research, restoration or other administrative management work crews would have short-term, site specific impacts to visitors' solitude during work periods. Effects are expected to be limited to a time frame of less than 6 weeks annually. Impacts to solitude would be minimized or reduced by scheduling management activities to times outside of the peak season. Successful efforts to protect, stabilize, or restore native plant communities would benefit primitive recreation opportunities by maintaining the natural setting.

Impacts on Untrammeled Condition

Actions taken to restore native plant communities would create a trammeling effect in the wilderness. Approximately 10 planting actions over 200 acres would be expected annually over the life of this plan. Actions to restore native prairies by removing encroaching conifer seedlings would also create trammeling impacts. Approximately 20 conifer removal projects would be conducted over the life of this plan. Trammeling impacts would be greater than under the no action alternative, however they would occur on a small percentage of the wilderness.

Impacts on Unique and Supplemental Values

Restoration of grasslands may benefit the habitat available to species that comprise the prey base for migratory raptors and coastal prairie sensitive plants such as the Siskiyou checkerbloom (*Sidalcea malvaeflora ssp. patula*) and Pacific blue field gilia (*Gilia capitata ssp. pacifica*), and nectar species like western dog violet (*Viola adunca*). Preserving nectar species may benefit native pollinators.

4.4.3.2.2 Impacts from Fire and Fuels Management

Impacts on Naturalness

Continued suppression actions within the wilderness under the proposed action would impact naturalness but at lower levels than the no action alternative.

Ongoing maintenance of the shaded fuelbreak system would impact naturalness on up to 360 acres (10 miles in length and up to 500 feet wide) which would be treated along portions of the wilderness boundary. Some tree and brush cutting in this area, as well as employment of a more frequent prescribed fire regime to keep fuel levels lower,

would result in minor impacts to naturalness on this acreage. Overall, this action would improve naturalness in the wilderness by providing a defensible perimeter on the boundary and limiting incursions by heavy equipment into the area for fire suppression. Decreased potential for surface disturbance from suppression activities would reduce the chance of introducing or spreading non-native, invasive plant species when compared to the no action alternative. Creating defensible fuel breaks along boundaries would also allow for larger areas of wildfire within the wilderness, which would benefit naturalness where natural fire regimes and fuel loading are re-established. Smoke generated from prescribed burning to establish or maintain fuel breaks would impact air quality during project implementation.

The identification and cooperative management with CALFIRE of a "heavy equipment exclusion area" of 18,139 acres would improve naturalness, by preventing alteration of soils, hydrology, vegetation, and wildlife habitat from heavy equipment use.

Conducting fire suppression damage repairs and emergency stabilization and rehabilitation actions to address wildfire or suppression related impacts prior to the rainy season would prevent long-term, irreversible impacts from erosion or loss of native vegetation. Stabilization and rehabilitation projects may include restoration of legacy impacts (e.g., historic logging roads) that are destabilized during future fire events, which may further reduce impacts from sedimentation and disrupted hydrology.

Impacts on Undeveloped Character

Maintaining fuel breaks and conducting limited prescribed burning along the wilderness boundaries may reduce occurrences of heavy equipment use within wilderness. Minimizing the use of heavy equipment for fire management would reduce the potential for impacts to the undeveloped setting from the construction of fuel breaks, temporary roads, staging areas, and safety zones.

Impacts on Opportunities for Solitude or Primitive and Unconfined Recreation

Short-term, site specific impacts to the visitor experience would also be expected as a result of fire and fuels management activities. Management activities to maintain fuel breaks and suppress wildfire would create short-term impacts to visual resources and visitors' solitude. Manipulation of vegetation within the shaded fuel breaks would create changes in line, color and form along wilderness boundaries, which would disrupt visual resources in perpetuity. Solitude would

be impacted during the presence of work crews. Requiring the use of MIST (Appendix D) and ensuring that suppression related impacts are addressed in fireline damage repair, emergency stabilization, and rehabilitation plans would minimize evidence of past management activities, which would benefit opportunities for solitude and primitive recreation. The maintenance of defensible fuel breaks would help minimize the future use of mechanical equipment within wilderness, which would also reduce future impacts to visitor experience or facilities.

Impacts on Untrammeled Character

Short-term trammeling actions to establish fuel breaks would create conditions that may allow for the return of natural wildfire in some areas of the wilderness. Restricting the use of heavy equipment within the specified area and utilizing maintained fuel breaks along wilderness boundaries would help reduce the number of motorized incursions from future fire suppression activities. Approximately two prescribed burns would occur annually during the life of this plan, dependent on having the proper conditions to conduct safe controlled burning, which may not occur every year. Overall this would allow for less invasive suppression activities within the core areas of wilderness.

Impacts on Unique and Supplemental Values

The identification and cooperative management with CALFIRE of a heavy equipment exclusion area would reduce the potential impacts to cultural resources or sensitive wildlife habitats on approximately 18,139 acres.

4.4.3.2.3 Impacts From Invasive Plant Species Management

Impacts on Naturalness

Invasive weed monitoring and eradication efforts would retain and restore native plant communities, and improve naturalness by minimizing new weed infestations and removing or limiting the spread of existing infestations. Removal efforts would cause temporary adverse impacts to naturalness through soil disturbance. However, these impacts would be temporary and overall naturalness would improve, especially in areas where removal efforts are followed by native plantings or where native plant communities naturally repopulate previously impacted areas.

Impacts on Undeveloped Character

Impacts from motor vehicle use may occur if such use is authorized. Impacts would be limited to the authorized access corridors identified in Figure 2-12.

Impacts on Solitude or Unconfined Primitive Recreation

The presence of restoration crews would create site-specific impacts to visitors' solitude during work periods. Impacts to solitude would be minimized or reduced by concentrating management activities to times outside of the peak use season.

Impacts on the Untrammeled Condition

Treating invasive, non-native plants within wilderness creates trammeling impacts. Approximately 7,500 acres would be treated by up to 20 actions annually. Actions taken to eradicate and contain known infestations would require a greater number of low intensity treatments, but would prevent large-scale, intensive future treatments that would be expected under the no action alternative.

Impacts on Unique and Supplemental Values

No impacts are anticipated to unique and supplemental values.

4.4.3.2.4 Impacts From Livestock Grazing Management

Impacts on Naturalness

Overall naturalness within the Spanish Flat Grazing Allotment would be improved with the proposed development of a new water source on Commodore Flat. The new water source is expected to improve livestock distribution and reduce resource impacts, such as increasing weed infestations that result from spot heavy grazing and related exposures of bare ground. The immediate area around the proposed development site would receive heavier use which would impact naturalness at that site. The new water development may immediately alter wildlife browsing patterns, but should improve overall habitat conditions in the long-term.

Impacts on Undeveloped Character

The addition of new stock watering facility would diminish the undeveloped quality in the immediate location of the project and would require future mechanization to maintain, operate, and inspect the new development. The new development would be located and designed to meet Class 1 Visual Resource Management standards, which requires new disturbances to remain substantially unnoticeable to most visitors (USDI 1984).

The removal of unauthorized range improvements or structures, such as fences and pipelines, would reduce the number of developments within wilderness thereby improving the undeveloped character of the area.

Impacts on Solitude or Primitive and Unconfined Recreation

The proposed spring development on Commodore Flat would be expected to alleviate impacts along the Cooskie Spur Trail from grazing use. Improved cattle distribution that effectively reduces grazing impacts to natural water courses and vegetation along hiking trails would benefit wilderness recreation visitors.

Impacts on Untrammeled Character

Developing a new water tank and maintaining existing spring developments would impact natural vegetation and hydrologic function of a single water source in the wilderness.

Impacts on Unique and Supplemental Values

Improved livestock distribution resulting from the development of a new water source would alleviate potential trampling impacts to cultural resources in a portion of the Spanish Flat Allotment where localized heavy grazing creates surface disturbance.

4.4.3.2.5 Impacts From Private Land (Inholding and Edgeholding) Access

Impacts on Naturalness

Maintenance of Kinsey Ridge Trail for year-round passage of four-wheel drive vehicles, including the occasional rebuilding of a stream crossing at Kinsey Creek will perpetuate impacts to soils, vegetation, and hydrologic function.

Impacts on Undeveloped Character

Roads maintained for four-wheel drive vehicles would be retained as permanent developments.

Impacts on Solitude or Primitive and Unconfined Recreation

Visits to private parcels would impact solitude or primitive and unconfined recreation opportunities. Impacts would vary depending on timing, duration, and number of visitors.

Impacts on Untrammeled Character

Continued maintenance of roads would perpetuate trammeling impacts.

Impacts on Unique and Supplemental Values

No impacts are anticipated on unique and supplemental values.

4.4.3.2.6 Impacts from Management of Rights-of-Way

Impacts on Naturalness

Minor, site specific impacts to naturalness would be expected from implementation of the proposed action. Two sites where scientific monitoring facilities are located would be allowed to recover to their natural condition if the facilities are successfully relocated to areas outside of wilderness, enhancing naturalness. Minimizing the need for access to instrument sites and maintenance would reduce the possibility of inadvertent impacts to vegetation from vehicle use or the introduction of non-native species, disturbance of wildlife, or other human caused impacts.

Impacts on Undeveloped Character

Relocating the two ROW to areas outside of the wilderness would eliminate permanent developments and site specific impacts to the undeveloped quality. Short-term impacts from the use of motorized equipment to remove the instruments would be expected. If alternate locations cannot be found outside of wilderness, impacts would continue at the present levels throughout the term of the ROW.

Impacts to Solitude or Unconfined Recreation

Short-term impacts to visitor solitude may occur infrequently from operation, maintenance, or removal of ROW sites. Visual resources would be returned to Class 1 Visual Resource Management standard conditions following the removal and restoration of the existing ROW sites.

Impacts on the Untrammeled Condition

No impacts are anticipated to untrammeled character

Impacts on Unique and Supplemental Values

No impacts are anticipated to unique and supplemental values.

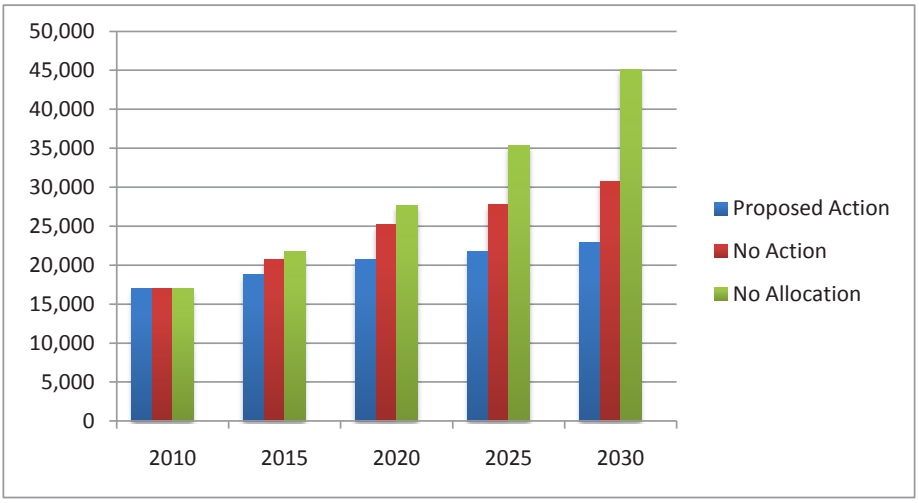
4.4.3.2.7 Impacts from Wilderness Recreation Management (Visitor Access, Managing Visitor Impacts, Recreation Facilities, Public Information and Management Presence, and Wilderness Search and Rescue)

Impacts on Naturalness

Implementation of the proposed action would reduce peak levels of visitor use under a permit allocation system. Reducing and limiting visitor use would minimize new impacts to vegetation, soils, and wildlife resources caused by visitors expanding into new camping locations

during peak use times. Under the proposed action, an overall increase in use of approximately 2 percent annually over the first 10 years of plan implementation and 1 percent over the remainder of the plan is assumed. Comparatively, the no action alternative assumes a 4 percent increase for the first 10 years and then a 2 percent increase over the remainder of the plan. If a permit allocation system was not implemented the assumption is a 5 percent annual increase over the life of the plan. Figure 4-2 shows a comparison of projected visitor increase over the life of the plan.

Figure 4-2 Projected increase in visitor use



Increased visitor use under the proposed action could affect a variety of natural resources. For example, water quality impacts from additional levels of improperly buried human waste would occur, but would be less than the no action alternative. Monitoring and associated adaptive management actions (e.g., education, requiring pack it out, reduce trailhead starts, etc.) would be implemented to minimize these impacts.

Developing and maintaining trails to appropriate standards would maintain existing levels of disturbance within the wilderness by concentrating visitor use in sustainable areas. Proper maintenance would also prevent impacts from erosion and the development of user-made trails by providing public access on well constructed trail tread.

Developing the proposed Mill Creek Trail within the Mill Creek Area of Critical Environmental Concern would impact naturalness along the approximately 7-mile trail corridor from removal and suppression of vegetation and alteration of wildlife use patterns. Trail development would also increase the potential for a variety of human caused impacts, such as the introduction of human waste, litter, invasive weed seeds, an increased chance of wildfire ignition, and noise.

Forgoing the development of a trail in the Honeydew Creek watershed and removing the existing trail that runs north from the terminus of King Range Road from public maps would maintain a large intact ecosystem relatively free of human disturbance.

Impacts on Undeveloped Character

The proposed decision to not build a trail in the Honeydew Creek watershed would maintain and improve the undeveloped setting and remoteness of a large core area of wilderness. Removing the existing trail that originates at the terminus of King Range Road from public maps would further benefit the undeveloped setting and remoteness, as the existing trail deteriorated and was allowed to return to natural conditions. Opportunities for solitude and primitive recreation would be maintained and improved in the watershed.

A new trail in the Mill Creek watershed would create new permanent developments in wilderness. The trail would utilize a combination of new trail and existing roads and trails along Prosper, Johnny-Jack, and the HJ ridges. Approximately 4 miles of new trail bench would be constructed where existing roads cannot be used. Interpretive materials would be disseminated off-site, which would not impact the primitive, undeveloped setting of the wilderness.

Removing shelters, beach art and other man-made structures would restore and maintain the undeveloped conditions and would enhance visitors' perception of recreating in a primitive setting along the LCT. Undeveloped conditions would also be enhanced at a few small, site-specific locations within wilderness by removing unnecessary trail amenities (e.g., King Peak structure, Chemise Mountain Trail benches) when they deteriorate.

Relocating the interpretive panel at Punta Gorda Lighthouse to the interior of the lighthouse structure would reduce small, site specific existing impacts to the undeveloped setting, while still providing valuable educational opportunities.

Mechanized and motorized use for SAR operations would be minimized and could be reduced under the proposed action, due to an improved ability to coordinate SAR efforts between the responsible agencies and with the use of the search urgency worksheet (Appendix F). The number of vehicles and trips would be limited to those that are absolutely necessary to provide public safety.

Impacts on Solitude or Primitive and Unconfined Recreation

The combination of proposed actions to manage for solitude would provide greater opportunities for solitude by reducing and capping visitor use, reducing human created impacts, and preventing impacts through strengthened public outreach. Limiting the number of daily starts into the wilderness would maintain opportunities for solitude and minimize user-conflict that results from crowding and loss of privacy. Opportunities for solitude would be enhanced during peak weekends that regularly experience the most crowded conditions. Visitor use during off-peak times would be expected to increase slightly due to visitor displacement from the peak times when permit quotas are reached. However, off-season use is limited naturally by winter storm conditions that can make creek crossings and tidal areas difficult, if not impossible to negotiate. Displacement to other upland areas of the wilderness is also possible, but would be minimal due to the difficult terrain and lack of reliable drinking water that is characteristic of the upland areas. Displacement of use and associated impacts to other areas outside of the wilderness and King Range NCA, such as the Sinkyone Wilderness State Park, would also be expected throughout the peak season.

Maintaining solitude would help facilitate important personal benefits, such as opportunities to, "escape from civilization" and "enjoying the sights and sounds of nature," which are important motivations for visiting the wilderness. Establishing target visitor capacities by use area would provide an objective and consistent means to evaluate crowding, which would be used to trigger management actions for specific areas that exceed the targeted standards. The proposed action would also limit the total number of SRP user days to 50 percent of the total use. This would still allow for increases in the overall SRP use during non-peak times, while maintaining opportunities for casual, non-SRP users during peak times. Allowing additional SRP use would help provide unique opportunities to experience wilderness, especially for people who lack the skills, equipment, or support to experience the wilderness on their own. Adaptive measures to establish group use sites away from other camps and requiring their use by all SRP groups, would help minimize campsite interaction, thereby enhancing opportunities for solitude for other trail users. The proposed action would result in lower average visitor load (number of people within the wilderness at one time) when compared to the no action.

Solitude would be further enhanced by successful outreach efforts. Public information that helps to better distribute use throughout the wilderness by providing visitors with current visitor use information and

ways to avoid congested areas along the LCT could help visitors self distribute, avoiding restrictive management actions. Visitors would have the ability to base their expectations for solitude on actual backcountry use conditions, therefore creating accurate expectations (Cole and Hall 2007), and thus could minimize impacts when crowded conditions cannot be avoided. Visitor solitude would also benefit from a reduction in the evidence of other users (e.g., presence of trash, human waste and fire scars), which would be reduced commensurate with an improved level of visitor understanding and compliance gained through strengthened public outreach efforts and enforcement.

Visitors' perception of recreating in an unconfined setting would be impacted by decisions that require permits, restrictions to campsite location and other use restrictions. While the unconfined opportunities would generally be diminished, primitive conditions and associated recreation opportunities from recreating in a natural, undeveloped environment would be enhanced.

Visitors' opportunity to recreate in an unconfined, spontaneous fashion would be diminished, due to the need to reserve a permit and the likelihood that some weekends would not be available for all users who wish to visit. The number of overnight visitors starting from any trailhead per day was determined through analysis of backcountry permit data. Based on historic start data, over 70 people per day may not be able to obtain a permit during the busiest weekends in the peak season. Impacts are expected to be incurred primarily off-site, prior to visitors' arrival to the wilderness, which would minimize direct impacts to visitors' wilderness experience. Having 25 percent of permits available the day before the permit date and limiting the total number of entries by SRP users would maintain opportunities for spontaneous use by the general public. Adaptive management measures that would require fixed itineraries, designated campsites, mandatory pack-out policy for human waste, or a reduced number of daily entries would further diminish the unconfined type of recreation. Visitor route choice and campsite selection may not be as important for visitors who are traveling with "guided" trips, since trip itineraries are provided by organizers. Increased backcountry presence by both law enforcement officers and wilderness rangers would further detract from the opportunities to participate in an unconfined type of recreation.

New recreation opportunities would be provided within wilderness by constructing a new trail in the Mill Creek watershed. Developing interpretive materials and programs for the trail would enhance educational and interpretive opportunities. Opportunities for self-discovery and challenge would be diminished in this area.

Impacts on Untrammeled Character

Impacts would be limited to those activities that are conducted to develop and maintain existing recreational infrastructure and to provide hardened sites for group uses. Maintaining spring developments as backcountry drinking water sources would continue to impact natural hydrology and vegetation of four wilderness watercourses. Decisions to maintain and improve the backcountry trail system would also continue trammeling effects within wilderness, due to the continued need to manage drainage and remove vegetation to provide side and overhead clearance. Furthermore, the adaptive management decision to develop new group use sites would diminish the untrammeled condition of a limited number of specific camping areas.

Impacts on Unique and Supplemental Values

Reducing use and implementing public outreach programs would minimize impacts to unique and supplemental values. Developing new interpretive and educational information about unique resources would lead to a greater appreciation for and willingness to protect sensitive natural and cultural resources.

Socioeconomic Impacts

Socioeconomic impacts are described here because this suite of actions is the only portion of the plan for which socioeconomic impacts are anticipated.

Limiting the number of SRP user days limits the potential for private outfitter businesses. A small number of outfitters may not be authorized to conduct trips as they have in the past, which may reduce potential profits. While imposing limits would create a finite number of clients that could be brought into the wilderness, it would preserve the quality of the wilderness experience, which would help to maintain or enhance the long-term value of a commercial permit. No significant impacts are anticipated to local, regional or national economies.

4.4.3.2.8 Impacts from Management of Cultural Values

Impact on Naturalness

Maintaining the historic orchard in Hidden Valley would perpetuate the life span of non-native trees within wilderness and may create unnatural browsing patterns by wildlife.

Impacts on Undeveloped Character

Undeveloped character would be improved on less than 1 acre by relocating the existing interpretive panel at Punta Gorda Lighthouse to

the inside of the existing lighthouse structure. Relocating the panel would reduce the footprint and number of permanent developments within wilderness. In addition, short-term, adverse impacts could be expected in conjunction with certain monitoring, inventory and stabilization projects at the Punta Gorda Lighthouse that utilize mechanical or motorized equipment. The use of mechanized equipment, such as a ground-penetrating radar instrument equipped with wheels to test cultural sites would create short-term mechanization impacts along the access routes.

Impacts on Solitude or Primitive and Unconfined Recreation

Management activities to secure and stabilize the Punta Gorda Lighthouse would maintain existing opportunities to experience historic resources in their original setting and would improve visitor safety by restricting access into the oil house structure. Stabilizing the lighthouse and maintaining interpretive information on the interior of the lighthouse structure would benefit the recreation experience by maintaining opportunities to learn about historic uses of the wilderness.

The presence of survey, research, restoration or other administrative management work crews would have short-term, site specific impacts to visitors' solitude during work periods. Impacts to solitude would be minimized or reduced by limiting management activities to times outside of the peak season. Efficiencies gained through the use of mechanical or motorized equipment would also reduce crew time spent in the wilderness, which would minimize impacts to solitude.

Impacts on Untrammeled Character

Stabilization of sites that are naturally eroding using structures or geotextiles would create trammeling impacts by interfering with natural processes.

Impacts on Unique and Supplemental Values

Proposed actions to stabilize and maintain the Punta Gorda Lighthouse and the historic orchard in Hidden Valley would benefit the unique and supplemental values of the wilderness. Stabilizing the Punta Gorda Lighthouse would prevent impacts from public use of the structure. Limiting visitation to maintain and reduce historic use levels would help minimize direct impacts to cultural resources from campsite development, waste disposal, trampling, and incidental discovery and collection of artifacts.

Significant prehistoric sites would continue to be protected through monitoring, testing, and stabilization projects, which would protect

the integrity of the sites and their eligibility for listing in the National Register of Historic Places. Utilizing mechanized tools to conduct inventory and testing would help discover and preserve significant resources. Maintaining the historic orchard in Hidden Valley would help conserve important elements of the historic homestead setting.

4.4.3.2.9 Impacts From Implementation of a Research Program

Impacts on Naturalness

Adopting a formalized research program could stimulate research that would guide future management decisions. Research that aids in the protection and recovery of sensitive natural resources would benefit naturalness of the wilderness.

Impacts on Undeveloped Character

No impacts are anticipated on the undeveloped condition.

Impacts on Untrammeled Character

Research activities associated with wilderness resources could result in trammeling impacts (e.g., fish sampling, bird banding). It is estimated that research interest in the King Range Wilderness and Rocks and Islands Wilderness would increase in the future as the area presents a relatively large, intact coastal ecosystem. However, research activities that include trammeling actions are expected to be infrequent (less than one per year) and would undergo a project specific assessment to determine impacts to wilderness character.

Impacts on Solitude or Primitive and Unconfined Recreation

The presence of survey, research, restoration or other administrative management work crews would have short-term, site specific impacts to visitors' solitude during work periods. Impacts to solitude would be minimized or reduced by scheduling management activities to times outside of the peak season.

Impacts on Unique and Supplemental Values

No impacts are anticipated to unique and supplemental values.

4.4.4 Supplemental Authorities

Appendix 1 of BLM's NEPA Handbook (H-1790-1) (USDI 2005) identifies Supplemental Authorities that are subject to requirements specified by statute or executive order and must be considered in all BLM environmental documents. The table below lists the Supplemental Authorities and their status in the planning area. Supplemental Authorities that

may be affected by the proposed action are further described in the environmental impacts sections of this EA.

Critical Element(s)	Not Present	*Present Not Affected	**Present May be Affected	Location of Impact Analysis in this Chapter
Air Quality			X	Sections 4.4.3.2.2 and 4.4.4.2.2.
Areas of Critical Environmental Concern			X	Sections 4.4.3.2.6 and 4.4.4.2.6.
Cultural Resources			X	Sections 4.4.3.2.2, 4.4.3.2.4, 4.4.3.2.6, 4.4.3.2.7, 4.4.4.2.2, 4.4.4.2.4, 4.4.4.2.6, and 4.4.4.2.7.
Environmental Justice	X			There are not environmental justice concerns within the planning area.
Farm Lands (prime or unique)	X			Prime or unique farm lands would not be affected.
Floodplains		X		Floodplains would not be affected.
Invasive, Nonnative Weed Species			X	Sections 4.4.3.2.2, 4.4.3.2.3, 4.4.3.2.4, 4.4.3.2.5, 4.4.3.2.6, 4.4.4.2.1, 4.4.4.2.2, 4.4.4.2.3, 4.4.4.2.4, 4.4.4.2.5, 4.4.4.2.6
Migratory Birds		X		Migratory birds would not be affected.
Native American Religious Concerns		X	X	Native American religious concerns would not be affected.
Threatened or Endangered Wildlife		X	X	Threatened and Endangered Species would not be affected.
Wastes, Hazardous or Solid	X			There are no concerns with hazardous or solid wastes.
Water Quality:				
(surface/ground)			X	Section 4.4.3.2.4, 4.4.3.2.6
Wetlands/Riparian Zones			X	Sections, 4.4.3.2.4, 4.4.3.2.6, 4.4.4.2.4, 4.4.4.2.6.
Wild and Scenic Rivers	X			There are no wild and scenic rivers in the planning area.
Wilderness			X	Impacts are described throughout the chapter for each of the wilderness character components by resource program.
Fish Habitat		X		Fish habitat would not be affected.
Forests and Rangelands			X	4.4.3.2.4

*Resources or uses determined to be Present/Not Affected need not be carried forward or discussed further in the document.
**Resources or uses determined to be Present/May Be Affected must be carried forward in the document.

4.4.5 Cumulative Effects

NEPA requires evaluation of an action's potential to contribute to "cumulative" environmental impacts. A cumulative impact is defined as: the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts can result from similar projects or actions, as well as from projects or actions that have similar impacts (40 CFR 1508.7).

The objective of the cumulative impact analysis is to evaluate the significance of the proposed action's contribution to cumulative environmental impacts. It is accomplished in four steps:

1. Identify the cumulative effects issues associated with the proposed action and define the assessment goals.
2. Establish the geographic scope for the analysis.
3. Establish the time frame for the analysis.
4. Identify other actions affecting the resources, ecosystems , and human communities of concern.

4.4.5.1 Cumulative Impacts From Management of Grasslands, Invasive Weeds, Fire and Fuels, and Recreation

Past, Present and Reasonably Foreseeable Actions and Cumulative Affects:

Grasslands

Cumulative Assessment Area: Mattole River Watershed and west slope stream watersheds.

There are about 27,000 acres of grasslands in the Mattole watershed, and about 5,000 acres of grassland in the King Range wilderness. BLM managed acres amount to approximately one sixth of the grassland acres in the assessment area.

Past, Present and Reasonably Foreseeable Actions: Current maintenance and efforts to restore grasslands in the assessment area is conducted primarily through active livestock grazing. Mechanical methods and prescribed fire are available tools that are seldom applied; and thus seldom achieve lasting results. The prairies in the region exist among heavily forested areas, many without sufficient appropriate disturbance to maintain them. Historically, Native Americans burned these areas at

regular intervals to help preserve the open environment to make food collection easier and enhance the habitat for the game on which they depended, such as elk and deer. Fire suppression and gradual changes in land use over the last 150 years has allowed late-successional species in grasslands such as coyote bush and Douglas-fir to invade the prairies. Both private and public lands to the east of the wilderness contain tracts of grassland. Much of the private lands are still used primarily for livestock grazing.

In total, there are over 5,000 acres of prairie in the wilderness that are proposed to be maintained through an integrated means including mechanical applications, livestock grazing, and prescribed fire under the proposed action.

Additionally, the Mattole Restoration Council (MRC) with their Wild and Working Lands program are increasing project implementation capacity to work with private landowners within the 27,000 total grassland acres in the Mattole watershed. The MRC has in recent years developed the ability to conduct surveying and mapping of native grassland, native seed collection, native grass revegetation, and meadow reclamation through pulling and lopping Douglas-fir and coastal scrub species. However, for cumulative impact purposes, It is unknown to what measureable degree the MRC would be able to partner with private landowners to implement conservation projects on these 27,000 acres of grassland.

Cumulative Impact: Implementation of the proposed actions would measurably contribute to the overall conservation of prairies in the assessment area, and would provide a refuge of available habitat for plants and animals that depend on them. The no-action alternative would contribute to a loss of about 1,000 acres of native grasslands or about 0.4 percent of the total grassland acres in the assessment area.

Invasive Weeds

Cumulative Assessment Area: Mattole River watershed and west slope stream watersheds.

The assessment area contains a variety of invasive, non-native species. French broom, Scotch broom (*Cytisus scoparius*), Cape ivy, pampas grass, tansy ragwort, gopher weed and a variety of other invasive, non-native species have established populations within the wilderness and surrounding landscape.

Past, Present and Reasonably Foreseeable Future Actions: The BLM and the MRC have worked to eradicate infestations on both private and

public lands, inside and outside of the wilderness. The MRC has specifically focused on eradication of Scotch broom and Japanese knotweed (*Fallopia japonica*). Eradication and containment efforts in the assessment area over the past two decades have utilized a variety of strategies, primarily consisting of mechanical methods, livestock grazing, tarping and sun exposure, hand tools, biological control release, and herbicide injection. Other methods have been applied on all private lands are unknown in the assessment area. The most successful treatment for invasive weeds is through education and prevention, combined with early detection and rapid treatment response.

Cumulative Impact: Implementation of the proposed action to eradicate invasive weeds would contribute to the assessment area-wide effort to conserve native ecosystems and slowly reverse the spread of invasive weeds. As invasive species spread across jurisdictional boundaries, it is important to maintain collaborative working relationships and effective treatment strategies throughout the assessment area.

Fire and Fuels Management

Cumulative Assessment Area: State of California.

Wildfire risk across California varies regionally from early summer through late fall, however fire danger can become extreme throughout most of the state simultaneously in some years.

Past, Present and Reasonably Foreseeable Future Actions: Fire management efforts in the past have been conducted by local, state and federal resources. Full suppression has been and would continue to be the primary management strategy for most of the assessment area, which has and will continue to create unnaturally high fuel loading and direct natural resource impacts. Heavy equipment use has been minimized in the wilderness, and only allowed when conditions warrant through collaboration with CALFIRE. It is expected that future wildfire circumstances may require the use of heavy equipment in the wilderness, but would not be allowed in the heavy equipment exclusion area.

For the past several years, BLM has worked with federal and state agencies and private contractors to develop shaded fuel breaks along wilderness boundaries and ridgelines. Fuel breaks have been established on Paradise Ridge and Prosper Ridge (Figure 3-2).

Cumulative Impact: Restricting heavy equipment may cause delays in firefighting efforts as line construction by hand crews can take longer. Therefore, restrictions could result in greater numbers of hand crews needed with longer time commitments for wildfires in the King

Range, making those crews unavailable to other suppression operations throughout the state. Although hand crews are readily available nationally, mobilization from other states creates delays and significantly increases fire complexity and cost. Longer duration of wildfires may compromise air quality, such as in 2003 when the Honeydew Fire, along with other local wildfires, resulted in schools in the Eel River Valley and the Garberville Airport being closed for a few days.

However, it is important to note that, although heavy equipment has been allowed several times within the wilderness for suppression actions, in the last 30 years there has been less than one mile of line construction by bulldozers in the heavy equipment exclusion area. This occurred on the 24th day of fighting the Honeydew Fire, and was allowed by BLM as hand crews were becoming unavailable due to fatigue and needed to meet work/rest requirements for firefighters. Historically, extreme fire behavior, hot and dry weather, heavy accumulations of fuel, and very inaccessible terrain has had a much greater affect upon wildfire size and duration than any restrictions or suppression resources availability. The planning area, in general, is an exceedingly difficult landscape to fight wildfire.

The existing shaded fuel breaks and the proposed action to expand and maintain fuel breaks using prescribed fire would help provide for defensible positions to control wildfire, while minimizing the need for new fireline construction within wilderness or other surrounding lands. Regularly maintaining and enhancing these identified fire control lines should result in faster fire suppression and reduced commitment times for firefighting resources. Prescribed burning would only take place on days authorized by the North Coast Unified Air Quality Management District and California Air Resources Board for appropriate mixing height and transport wind conditions, minimizing impacts to the assessment area.

Recreation Use

Cumulative Assessment Area: The King Range National Conservation Area Trail System.

The King Range Wilderness contains the majority of trail opportunities in the NCA. The existing trail system in the King Range consists primarily of intermediate to advanced hiking opportunities.

Past, Present and Reasonably Foreseeable Future Actions: Two new trails would be developed within the lifespan of this plan, the Mill Creek Trail, which is identified in the proposed action, and the Hidden Valley Trail, which was authorized to begin construction in the summer of 2010.

Cumulative impact: Implementation of the Hidden Valley trail and the Mill Creek trail would contribute to many of the impacts on naturalness, undeveloped character and untrammeled condition that were described previously for trail development, use, and maintenance. However, completion of the two trails would enhance hiking opportunities, provide diversity to the existing trail system, and make the wilderness accessible to a wider range of users. Increased overnight use along the new trails would add to the demand for limited permits. Interpretive programs and information that are developed for the trails would provide unique opportunities to learn about historic uses and values of the wilderness, and may indirectly lead to conservation of those resources. Together, the new trails would support the public purpose of primitive recreation within wilderness.