4.0 ENVIRONMENTAL CONSEQUENCES

This chapter analyzes the environmental consequences, or impacts, that are expected to occur as a result of implementing the management actions for the range of alternatives and the Proposed Action described in Chapter 2. The depth and breadth of the impact analyses presented in this chapter is commensurate with the level of detail of the management actions presented in Chapter 2, and the availability and/or quality of data necessary to assess impacts. The baseline used for reasonably foreseeable effects is the current conditions in the Planning Area, as described in Chapter 3. These are the conditions that would be expected under the current management alternative (Alternative A: No Action Alternative).

The BLM's Proposed Action is derived from the "preferred alternative" identified in Chapter 2, Section 2.5 of the Draft RMP & Draft EIS; and comprises a combination of land use authorizations and management actions proposed within the range of alternatives. Major changes to the Preferred Alternative are identfied in Section 2.1.1 of the CCMA Proposed RMP and Final EIS and are incorporated into the Proposed Action. Therefore, the the "preferred alternative" considered in the CCMA Draft RMP/EIS is not further evaluated in the CCMA Proposed RMP and Final EIS.

For the purpose of analysis, the impacts that are common among alternatives are grouped similar to Chapter 2. However, the intensity of impacts for each alternative are still based on the different combinations of management actions and varying levels of motorized or non-motorized access inside the Serpentine ACEC, and other allowable uses, land use authorizations, and the associated mitigation measures for public health and safety.

Generally, the impact analysis for each resource program is organized into the following subsections:

- Introduction
- Overview of Impacts to Resources;
- Impacts and Mitigation Measures under Alternatives A, B, C, D, and E;
- Impacts and Mitigation Measures under Alternatives F and G;
- Impacts and Mitigation Measures under the Proposed Action.
- Cumulative effects under Alternatives A, B, C, D, and E;
- Cumulative effects under Alternatives F and G;
- Cumulative effects under the Proposed Action.

4.0.1 Impact Analysis Methodology

In general, impacts to resources in the Planning Area are analyzed by determining the effects on a given resource from its resource-specific management actions (e.g., the Recreation section addresses impacts to recreation from recreation management actions), and then by determining the effects on that resource from the management actions listed under other resources (e.g., the Recreation section addresses impacts to recreation from biological resources management actions). In some cases, the impacts to other resources from the management actions listed for that resource are also analyzed (e.g., the Livestock Grazing section also addresses impacts on biological resources from rangeland management actions).

Impacts are related to desired future conditions by comparing the impacts from implementation of management actions to achieving the goals and objectives specified for each resource/resource program under the Proposed Action, and to the existing environmental conditions (under the No Action). For management actions that do not achieve the stated goals and objectives of the Proposed Action, or that generally do not meet BLM's multiple use mandate, or that result in significant negative changes to

physical or social conditions, the impact is characterized as adverse. For management actions that do achieve goals and objectives, the impact is characterized as beneficial. If a management action does not specifically affect a desired future condition, there is no impact. Finally, if there is not enough specificity to determine whether a management action would achieve the goals and objectives, the impact can only be described in general terms.

4.0.2 Types of Impacts to be Addressed

4.0.2.1 Direct and Indirect Impacts

Terms referring to the intensity, context (geographic extent), and duration of impacts are used in this chapter. Impacts are not necessarily only negative; many are positive benefits and are specified as such. The standard definitions for terms used in the impacts analysis include the following:

- Adverse – the effect is negative.
- Beneficial – the effect is positive.
- Negligible – the effect is at the lower level of detection; change would be hard to measure.
- Minor – the effect is slight but detectable; there would be a small change.
- Moderate – the effect is readily apparent; there would be a measurable change that could result in small but permanent change.
- Major – the effect is large; there would be a highly noticeable, long-term, or permanent measurable change.
- Localized – the effect occurs in a specific site or area.
- Temporary – the effect occurs only during implementation of a management action.
- Short-term – the effect occurs only for a short time after implementation of a management action.
- Long-term – the effect occurs for an extended period after implementation of a management action.
- Permanent – the effect is irreversible; the resource would never revert to current conditions.
- Direct – effect that occurs as a result of actions on the resource being addressed.
- Indirect – effect that occurs as a result from actions on other resources, or which are caused by the action and are later in time or farther removed in distance.

4.0.2.2 Cumulative Effects

40 CFR 1508.25 and the Council on Environmental Quality (CEQ) regulations require evaluation of an action's potential to contribute to "cumulative" environmental impacts during the land use planning process. 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). Cumulative impacts are also addressed in this chapter.

The objective of cumulative impact analysis is to evaluate the significance of the management alternatives and the Proposed Action's contribution to cumulative environmental impacts. The past and present

actions are discussed in Chapter 3, Affected Environment, while the future actions are discussed in this chapter.

4.0.3 Incomplete or Unavailable Information

Impacts are quantified where possible. Impacts are sometimes described using ranges of potential impacts or in qualitative terms. In the absence of quantitative data, impacts are described based on the professional judgment of the interdisciplinary team of technical specialists using the best available information. Impacts analysis based on incomplete or unavailable information is identified where applicable in this chapter**. In particular, uncertainties with regards to human health risks associated with asbestos and the impacts of public health and safety management actions are addressed in Section 4.2, Hazardous Materials and Public Health and Safety.**

4.0.4 Mitigation Measures

Mitigation measures designed to avoid or reduce impacts are incorporated into the management actions of each alternative and the Proposed Action, as defined in Chapter 2. Therefore, impacts identified in this chapter are unavoidable and would result from implementing the management actions and related mitigation measures.

4.0.5 Assumptions

The detailed impact analyses and conclusions are based on the Bureau of Land Management's (BLM's) knowledge of resources and the project area, reviews of existing literature, and information provided by experts in BLM, 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 do not reflect exact measures of on-the-ground situations. 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.

Several general assumptions were made to facilitate the analysis of potential impacts. The assumptions listed below are common to all resources. Other assumptions specific to a particular resource are listed under that resource.

- EPA's Asbestos Exposure and Human Health Risk Assessment (2008) provides the best available information on the risk associated with exposure to airborne asbestos fibers in CCMA.
- Changes in BLM policies have been made since the 1984 RMP was approved.
- Funding and personnel would be sufficient to implement any alternative described.
- The Proposed Action would be implemented in accordance with all laws, regulations, and standard management guidelines/best management practices.
- The level of motorized recreation activity on BLM-administered land is expected to decline, while levels of non-motorized recreation activities would increase based on historical trends, population increases, and statements of interest in land use by individuals and industry organizations. This includes ongoing reasonable access to private land or interests.
- Climate change will affect the planning area and likely result in warmer and drier conditions.

4.1 Recreation

For ease of reference, the management goals from Chapter 2 are restated here:

- The goals for recreation management are to (1) provide a variety of experiences and settings for a diversity of users and to meet potential changes in demand while minimizing conflicts with adjacent property owners and among user groups; (2) provide a range of recreational use opportunities while protecting sensitive natural and cultural resources from human intrusion; (3) promote sharing of ideas, resources, and expertise to increase the public's appreciation and understanding of natural and cultural resources on BLM public lands; and (4) disseminate information that will foster responsible behavior in order to achieve the highest possible environmental quality on BLM public lands.

4.1.1 Introduction

This section focuses on recreational opportunities and allowable uses, and impacts to users and resources. Section 4.15, "Social and Economic Conditions" addresses the social and economic value of recreation in the Planning Area. Motorized vehicle use for recreational purpose is described here; a discussion of vehicle use and route designations is included in Section 4.3, "Travel Management and Transportation."

The range of alternatives and the Proposed Action analyzed in this PRMP/FEIS were developed based on public comments on the CCMA Draft RMP/EIS (2009), and in response to the purpose and need identified in Chapter 1, in order to evaluate overall protection of human health and the environment. The management alternatives provide a reasonable range of recreational opportunities to consider, as allowable uses and other restrictions are stratified among *Motorized* (A, B, C, D, E) and *Non-motorized* Alternatives (F and G). The Proposed Action would also provide limited vehicular access with an emphasis on non-motorized recreation opportunities across the management zones within the CCMA.

The range of alternatives and the Proposed Action consider a variety of management actions to address human health risks from exposure to asbestos to CCMA recreational visitors. Under Alternative A (No Action), there would be no change to the type of allowable uses and recreation opportunities on BLM-managed lands in CCMA. Whereas, under Alternatives B – G and the Proposed Action, BLM would use a combination of best management practices (BMPs) and administrative actions (i.e. require permits and enforce supplementary rules) to reduce human health risks from exposure to asbestos in CCMA. Under all the alternatives, BLM would augment the existing public asbestos hazard information program through improved signing, hand-outs, advisories, monitoring, public contact, and education programs with new information from the EPA's CCMA Asbestos Exposure and Human Health Risk Assessment incorporated into these materials.

Overnight camping and staging would be prohibited in the ACEC. Although certain other allowable uses, competitive events, and commercial activities would also be prohibited within the Serpentine ACEC, the Proposed Action would allow vehicle access and scenic touring through the ACEC. Additionally, management of CCMA public lands would be focused on establishing and managing appropriate recreation opportunities on BLM-administered lands outside of the ACEC.

4.1.2 Overview of Impacts

This sub-section provides an overview of impacts that occur under all alternatives. The background and overall impact assessment is provided here and, as needed, further analysis, such as the location or severity of the impact, is provided under each alternative.

4.1.2.1 Impacts from Recreation Management Actions

Recreation Uses and Demand

As described in Chapters 2 and 3, in order to manage recreation on BLM-managed lands, public lands are designated as Special Recreation Management Areas (SRMAs) or Extensive Recreation Management Areas (ERMAs). Recreation in SRMAs is under intensive management, with investment in facilities and supervision. Anything not delineated as a SRMA is an ERMA. ERMAs are typically managed for more dispersed recreation with less oversight of facilities (e.g., trails, parking areas). The designation of a SRMA or an ERMA is an administrative action and does not result in any direct physical environmental impacts. Designation of a SRMA can, however, result in changes to the recreational opportunity in that area based on subsequent planning efforts.

Under all alternatives, except G, the CCMA would be managed as a SRMA and would have some inherent management emphasis as to the type of recreation that occurs within the different management zones. Under these alternatives, non-motorized recreation activities such as hiking, hunting, and rock-hounding would be allowed throughout the CCMA. Mountain bike and equestrian use opportunities would also be available; although, they would be limited to routes and trails on BLM-managed lands outside the Serpentine ACEC under alternatives E, F, and G because of health risk concerns from exposure to asbestos emissions that would be similar to riding a motorcycle or ATV.

Camping within the Serpentine ACEC would be prohibited inside the ACEC under all the alternatives. The broad spectrum of existing recreational opportunities currently meets the needs and demands of visitors; although additional opportunities for recreation would be needed in the future, especially in areas closer to urban centers, as the population in California continues to grow. Therefore, other recreation facilities would be developed outside the Serpentine ACEC under Alternatives B-F.

Recreational use of public lands can be expected to increase as population grows, not only in the Central Coast and Diablo Range areas that support local use but also throughout the HFO and California. If recreation use were to grow at a rate proportional to projected population growth in the Central Coast and Diablo Range areas, over 50,000 annual visits would be expected, compared to the 43,000 visitor use days recorded in 2006.

Increased visitor use would place higher demands on the recreation infrastructure and increase demand for developed and maintained facilities, access points (trailheads), comprehensive trail maps, and trail maintenance. Increased use would also place more demand on management resources, natural resources, and trail system infrastructure. Current observations are that OHV use at CCMA is not increasing at the rate of other OHV areas, although publicity and population growth would be expected to contribute to slight increases in CCMA visitor use over the life of this plan.

Conflicts with Other Uses, Adjacent Property Owners, or Among User Groups

Conflicts among users can occur between hikers, equestrians, and mountain bikers, or between motorized and non-motorized recreationists using the same trails or areas. For example, if one user is seeking a quiet and natural experience and another user is creating considerable noise or dust, there may be resulting conflict between the users. Under all alternatives, except E and F, some level of conflict would likely exist between hikers/hunters/rockhounds vs. motorized recreationists. This would primarily be an issue at the existing recreation facilities, mainly due to the disproportionate number of motorized users and diverse attitudes of CCMA visitors.

Additionally, conflicts can arise with adjacent property owners where poor signage or lack of property boundary posting allows potential trespass onto private property, or if nuisance noise or dust from biking or vehicles migrates from BLM lands to private property.

Education and Interpretation

Under all alternatives, BLM's management presence on public lands would continue to be improved through the use of signs, boundary markers, and outdoor displays. Educational and interpretive activities in and of themselves would not directly affect public services. The use of exhibits and interpretive facilities is an important and positive mechanism to educate CCMA visitors and conduct outreach regarding environmental stewardship and human health risks from exposure to asbestos. Web-based and print media would also be effective tools for assisting recreationists in planning visits to the public lands. Establishing expected behaviors and actions before a visitor arrives is the best way to minimize health risks and conflicts between users/individual recreationists and natural/cultural resources. If use patterns change based upon the selected alternative, new visitor use patterns will need to be ascertained so that education and interpretation materials can be tailored to better serve the new activities.

The construction of new education and interpretation facilities would be limited to concentrated use areas, so the impacts would be in association with existing use sites or new use site developments. In either case the education/interpretation portion of the development would have negligible impacts to the environment.

4.1.2.2 Impacts from Other Management Actions

Biological Resources

Management actions under Biological Resources may preclude recreational activities at certain times and locations. This includes restricting recreational activities near certain nesting sites, vernal pools, or near newly re-established vegetation, or restricting pets from entering ponds that may contain special status species. These restrictions are generally limited to very small areas, and may or may not be limited to a certain time frame, depending on the Alternative. While restricting recreation to a reduced area, even temporarily, would create additional burden on the surrounding recreation areas, the intent of these restrictions is to enhance the biological or ecological resources in the area, which in the long-term should enhance the recreation user's experience.

Livestock Grazing

The presence of livestock near recreation sites may or may not affect the activities occurring at the site. Some observers enjoy seeing cattle on the landscapes, while the signs of livestock grazing, such as fences, manure, and stock ponds, may impact the natural aesthetic for some visitors and impair the ability to enjoy the scenery and/or the solitude of the area they are visiting. Additionally, the presence of livestock in close proximity to recreation users can cause some conflict, as there can be collisions between users and livestock on heavily used trails. This would likely only be an issue in the Condon Zone where current grazing leases exist and future grazing leases are most likely to occur.

Energy and Minerals

Management actions associated with mineral and energy development may preclude recreational activity at certain locations and times. Currently, recreation users are restricted from entering public lands that are part of the Atlas and KCAC mine sites. Active and inactive mine sites have negative impact on the

viewshed of the area for recreation users. Increased traffic associated with active mine operations would increase asbestos emissions and pose an additional health risk to recreation users. Existing hard rock mining claims and newly established claims will prohibit access to public lands by amateur rockhounding enthusiasts.

Cultural and Paleontological Resources

All alternatives afford protection of these resources and permit some level of access to special areas. If during a planned event or by accident a special resource is encountered or if a special study is under way, recreation may be restricted from that area for a limited time. The restricted area would likely be small and also fenced or otherwise marked as restricted.

Travel and Transportation Management

Recreational activities including horseback riding, hunting, and rock hounding, require foot and/or vehicular access. Each alternative analyzed here establishes varying degrees of motorized and non-motorized access to certain recreation areas, miles of routes, and use of routes for specialized purposes.

While closing or specifying the appropriate use of certain routes may limit unnecessary impacts to other resources like vegetation or water resources, having some routes only open to administrative or research vehicles, and some routes closed on a seasonal basis would be confusing to some visitors and would require increased signage. While useful for navigating, any additional signage may alter the natural setting of the immediate surroundings.

Additionally, closing roads to motorized access for recreation could limit the ability of the public to access those areas, especially those areas far from other public roads or in areas where the terrain is difficult to access by foot or the distance to the destination is too great.

Furthermore, closing redundant roads that were previously open could result in increased use of those roads that remain open, possibly resulting in unanticipated impacts from the increased use.

Lands and Realty

BLM can increase public benefits by disposing of some public lands through sale or exchange, or by acquiring offered lands in areas that would enhance public enjoyment and facilitate resource management more efficiently. The BLM can enhance opportunities on public lands by acquiring lands that offer unique or desirable opportunities, or that allow increased or improved access.

4.1.3 Impacts to Recreation from Alternative A

4.1.3.1 Impacts from Recreation Management Actions

Recreation Uses and Demand

Under Alternative A, Clear Creek Management Area would remain a SRMA. Recreation would be governed only by existing decisions, and BLM would incorporate health risk information into public outreach and educational materials to improve human health and safety. Designation of CCMA as a SRMA would preserve BLM's ability to plan, expand, or restrict certain uses, and adequately plan for recreation use in this popular OHV recreation area, resulting in major, long-term, beneficial impacts to recreational opportunity in these areas.

Under Alternative A, vehicle use in the area would be limited to designated routes and barrens, and there would be no new roads constructed and no existing routes would be closed. This would be a considered a negligible impact to recreation opportunities in CCMA because it would maintain current management direction. However, continuing to allow motorized access in the Serpentine ACEC would be a major long-term benefit for OHV recreation because of the high-quality OHV riding opportunism available on the extensive OHV route network in CCMA, which is primarily concentrated within the ACEC.

Increased visitor use would place higher demands on the recreation infrastructure and increase demand for developed and maintained facilities, access points (trailheads), comprehensive trail maps, and trail maintenance. Increased use would also place more demand on management resources, natural resources, and trail system infrastructure. Current observations are that OHV use at CCMA is not increasing at the rate of other OHV areas, although publicity and population growth would be expected to contribute to slight increases in CCMA visitor use over the life of this plan.

Hobby gem and minerals collection (rock-hounding) and hunting would also continue to be popular activities in CCMA. Both would probably be subject to more restrictions due to human health risks from exposure to asbestos in CCMA. Areas outside the Serpentine ACEC will likely become more popular as BLM implements public health and safety measures. Volunteers could play a greater role in the development and maintenance of these areas.

Development of trails as well as installation of any other visitor facilities may become necessary to manage public use and meet recreation opportunity demands in the CCMA's San Benito Mountain Research Natural Area. Such infrastructure would require greater law enforcement presence, as well as increased demand for non-motorized trail use and improved facilities outside the Serpentine ACEC.

Conflicts with Other Uses, Adjacent Property Owners, or Among User Groups

Under Alternative A, user conflicts would continue to be an issue in areas where there is competition for non-motorized and motorized use on roads and trails and at other recreation facilities, such as campgrounds. Individual conflicts are temporary and localized, but would continue to have major long-term adverse effects on non-motorized recreationist and private landowners that are negatively impacted by safety hazards, noise, and large crowds associated with OHV use in CCMA. Whereas, impacts to motorized recreationist and OHV recreation would be negligible, even as recreation demand grows, because of the size of the designated OHV route network and the existing recreation facilities.

Education and Interpretation

Under this alternative, the use of boundary postings and outdoor kiosk/display sites would be encouraged. The Hollister Field Office would **c**ontinue to provide outreach and education through publications and field contacts to create public awareness of human health risks from exposure to airborne asbestos fibers in CCMA. By incorporating the best available information on human health risks from CCMA recreation activities, BLM's interpretation and education program would provide minor long-term benefits to public health and safety.

Additionally, all alternatives would promote a limited number of facilities in the Tucker, Condon, and Cantua management zones. Facilitates could include kiosk/display sites, restrooms, parking areas, trails, and campgrounds, depending on the need and level of use in the area. Use of such facilities would have mixed consequences. They can increase the enjoyment of recreation experiences for some visitors, but may detract from the naturalness for others. Implementation of these facilities would require greater law enforcement presence or patrol by BLM.

Overall, the addition of signs, kiosks, and facilities such as restrooms and parking areas in those areas most in need of such facilities would provide a moderate beneficial impact to recreation in those areas.

Visitor Use Fees

Visitor use fees were approved and implemented for CCMA on January 1, 2007. Use fees may exclude or detract certain visitors from participating in the activity for which the use fee is established. While this could adversely impact the population who cannot afford the fee, this would also have a minor beneficial impact in instances where overcrowding leads to less enjoyment of the activity or to environmental impacts.

4.1.3.2 Impacts from Other Management Actions

Biological Resources

Alternative A affords adequate environmental protection to biological and cultural resources. If this Alternative were selected, all road activities must be consistent with BLM Manual 9113, H-9113-2, and 9114. These actions would result in minor long-term beneficial impacts for transportation.

Livestock Grazing

Rangeland management activities would not appreciably impact opportunities for recreation. The presence of cattle near recreation sites may or may not affect the activities occurring at the site, or have an impact on the users' enjoyment of the landscape, depending on personal preference.

Energy and Minerals

Major energy and mineral exploration/development is unlikely within CCMA under Alternative A based on the underlying geology and health and safety concerns associated with the presence of asbestos. However, past mining activities have adversely impacted the viewshed and have created asbestos emissions in association with road construction and vehicle traffic. Currently all hard rock mining is casual use. No plans of operations are on file. The atlas and KCAC asbestos mines are fenced and no public access is allowed.

Lode claims in the area conflict with recreation opportunities. Rockhounders can recreate on sites with active lode claim. Development mine operations will create conflicts with other uses due to increased equipment use and potential for higher asbestos emissions.

Some oil and gas development has occurred in the Cantua area historically, and future development of energy and minerals anywhere in the CCMA would have potential conflicts with recreation opportunity and use. However, development of oil and gas on BLM-administered lands is not reasonably foreseeable and future mining activities are also unlikely due to environmental constraints.

Cultural and Paleontological Resources

Alternative A provides adequate protection of these resources. If a special resource is encountered or if a special study is under way, recreation may be restricted from that area for a limited time. The restricted area would likely be small, and a fence or barrier would be erected. This impact would generally be localized and short-term and would not result in any noticeable changes to recreation use or opportunity.

Travel and Transportation Management

This alternative would maintain current motorized and non-motorized recreation opportunities on approximately 270 miles of roads and trails within CCMA. The route network would continue to be evaluated for soil loss and habitat concerns with reroutes occurring as deemed necessary by appropriate staff in conjunction with further planning efforts, in compliance with the Biological Opinion. All uses other than pedestrian would continue to be restricted to designated routes and barrens. Minor user conflicts, both within and between motorized and non-motorized users, will likely continue and is considered a minor long term impact to recreation. Primary access would continue to be the main entrance at the intersection of Coalinga Road and Clear Creek Road. Access through Idria would be analyzed for management concerns and discussed with San Benito County, the current owner of the road, regarding public safety and environmental impacts stemming from this point of entry.

Alternative A would continue to be beneficial for the users' transportation and access throughout the management area, creating no new adverse impacts to either.

4.1.3.3 Mitigation

Mitigation measures are incorporated into the management actions described in Chapter 2. Therefore, no mitigation measures for impacts to recreation resources are necessary under Alternative A.

4.1.4 Impacts to Recreation Common to Alternatives B, C, D, E, F and G

4.1.4.1 Impacts from Recreation Management Actions

Recreation Uses and Demand

Under all alternatives, Clear Creek Management Area would remain a SRMA. Recreation would be governed by BLM manuals and policy, and the Hollister Field Office would incorporate health risk information into public outreach and educational materials to improve human health and safety. If the area could not be designated as a SRMA through this RMP process, the BLM would have limited ability to plan, expand, or restrict certain uses. The inability of the BLM to adequately plan for recreation use in these popular areas would result in minor, long-term, adverse impacts to recreational opportunity in these areas.

Human health risks and impacts to natural and cultural resources associated with allowable uses and recreation opportunities in CCMA would be mitigated through management actions and restrictions unique to each Alternative. Motorized and non-motorized recreation are a component of all Alternatives, with varying levels of access and use restrictions in each of the five management zones based on EPA's Asbestos Exposure and Human Health Risk Assessment (2008).

Under Alternatives B, C, D, E, F, and G, special recreation permits (SRPs) would only be authorized outside the ACEC to further reduce asbestos exposure and emissions associated with organized events. The restrictions on SRPs for organized events in the ACEC would have major long-term negative impacts on OHV clubs and groups that have historically held competitive motorcycle races, jeep tours, and other events; as well as any other organizations or clubs that promote group activities in the Serpentine ACEC because of the lost opportunity for fundraising and events sanctioned by the American Motorcycle Association.

As a result of the varying levels of recreation management and differences in allowable uses from Alternative A, all of these alternatives would have some potential for adverse effects on existing recreation resources. In particular, each of these alternatives would prohibit staging for recreational activities and overnight camping in the ACEC, with the exception of visitor use at Jade Mill for camping under all alternatives. Although the purpose and need for this RMP/EIS is based on minimizing and reducing human health risk associated with asbestos exposure, Upper Jade Mill campground is underlain by nonserpentine soils. BLM first identified the Jade Mill site for development of recreation facilities in the Hollister RMP (BLM, 1984); and as a result, the Upper Jade Mill site remains a favorite camping location and consistently receives heavy use.

These restrictions would have minor long-term negative impacts on all types of recreation use in the ACEC, including motorized and non-motorized activities, because of the decrease in facilities to support these visitor uses. On the other hand, Alternatives B, C, D, E, and F also promote enhancing recreation opportunities within the CCMA as a whole by developing new recreation facilities in the Tucker, Cantua, and Condon Zones, which would provide long-term benefits to recreation resources since they will no longer be exclusive to the ACEC.

Indirect impacts would increase as restrictions on allowable uses increase and recreation opportunities decrease across the range of alternatives from A - G, particularly within the Serpentine ACEC. These restrictions would displace thousands of recreationists, who would end up seeking OHV recreation opportunities in other County, State or Federal recreation areas. Most of these other areas are smaller than CCMA and additional visitors would contribute to overcrowded conditions and additional impacts to the human environment in those areas. Overcrowding can lead to increased conflicts among user groups, decreases in recreational quality and experience, and adverse impacts to other resources like vegetative cover, wildlife habitat, soil loss and erosion, and water and air quality.

Conflicts with Other Uses or Adjacent Property Owners, or Among User Groups

As under Alternative A, the existing, but limited, conflicts among user groups would continue at CCMA under all alternatives. While there are no management actions defined to address this issue, the change in recreational opportunities throughout the Planning Area, as provided under Alternatives B, C, D, E, F and G would decrease the potential for these conflicts due to substantial reductions in annual visitor use.

Education and Interpretation

Under these alternatives, the Hollister Field Office would provide recreation information such as maps, brochures, and educational opportunities to enhance visitors' experience on BLM public lands, incorporate the best available information concerning: asbestos health hazards, OHV use designations, fire prevention, BLM regulations, and natural resources of the area into educational materials and on all maps, brochures, and kiosks.. By incorporating the best available information on human health risks from CCMA recreation activities and other BLM regulations, the Hollister Field office interpretation and education program would provide moderate long-term benefits to CCMA recreation visitors.

All alternatives would allow the construction of new or upgraded facilities, depending on the availability of funding and partnerships, including signage, wayside exhibits, and kiosks, and therefore potentially would cause increased demand for public services (e.g. restrooms, picnic areas, more parking) at remote areas like Condon Peak and Cantua Zone. These efforts would result in moderate benefits for the awareness and understanding of CCMA resources for recreation visitors, and minor adverse effects on law enforcement patrols and emergency services.

Visitor Use Fees

Alternatives B through G would allow BLM the flexibility to continue visitor use fees. Use fees may exclude or detract certain visitors from participating in the activity for which the use fee is established. While this could adversely impact some visitors, most public land visitors are willing to pay a small fee for recreation opportunities in CCMA, and collection of visitor use fees could help improve recreation facilities and reduce the negative impacts associated with overcrowding or other environmental impacts. Overall, the adverse effects of visitor use fees would be outweighed by these potential benefits

4.1.4.2 Impacts from Other Management Actions

Biological Resources

Management actions for biological resources may preclude recreational activities at certain times in order to conduct restoration or scientific activities. These would be done on a limited basis in a limited area. In the short-term, the closure to recreation of these areas would be a temporary, negligible to minor adverse impact; however, in the long-term, users could appreciate the enhanced natural surroundings.

Livestock Grazing

Under the range of alternatives, impacts to recreation resources and activities could result from closures of access routes due to Rangeland Health Standards and Guidelines. Without vehicular access, the resource quality remains, but the opportunity for use is reduced or eliminated. The significance of impacts on recreational activities in the Planning Area would depend on the routes no longer available as a means of access to the public lands. However, rangeland health is not a major factor in the selection of routes in CCMA. Thus little impact to recreation resources and activities is anticipated.

As with Alternative A, the presence of livestock near recreation areas could result in collisions between users and livestock on heavily used trails. Generally, limiting allotments to grazing would avoid these conflicts. Alternatives F and G would exclude grazing from the Serpentine ACEC and the entire CCMA, respectively, which could have a minor, long-term beneficial effect on recreational opportunities for hunting, as game species would have increased forage available in the Condon, Cantua, and Tucker Zones.

Cultural and Paleontological Resources

Same as Alternative A.

Travel and Transportation Management

As with Alternative A, vehicle use on all BLM lands would be limited to designated routes under all alternatives. Additionally, full size vehicle traffic on the designated roads and trails would increase incrementally over time, and might show increases due to displaced use from closed roads and areas. However, a shift in emphasis from heavily motorized use to non-motorized use might reduce overall use of some roads and bring about a minor to moderate beneficial long-term impact to the character of the landscape that contribute to the value of recreation opportunities in the CCMA.

The environmental consequences of the range of alternatives for transportation and access are described in detail in Section 4.3.

Lands and Realty

Under all alternatives, the BLM could enhance recreation opportunities on public lands by acquiring lands that offer unique or desirable opportunities, or that allow increased or improved access. Because these actions would be highly subject to availability of funding and/or appropriate lands for acquisition, impacts can only be addressed at a general level. A detailed description of potential acquisitions and disposals of lands by Alternative is described in Section 4.18.

4.1.4.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

4.1.5 Impacts to Recreation from Alternative B

4.1.5.1 Impacts from Recreation Management Actions

Recreation Uses and Demand

Under Alternative B, there would be no new roads constructed and no existing roads abandoned. Vehicle use in the resource area would be limited to designated routes. The public lands managed by the Hollister Field Office would remain open to motorized recreation use on designated routes, except where closed by closure notices, and/or by activity-level planning decisions. Under Alternative B, BLM would continue to manage up to 270 mile route network and 478 acres of designated barrens for OHV use.

Under this alternative, BLM would require permits for access into the Serpentine ACEC to limit annual visitor use days in order to reduce asbestos exposure to acceptable risk levels. Based on the potential for excess lifetime cancer risk calculated in EPA's risk assessment, motorized access would be limited to less than 5 days/year, and non-motorized access would be limited to less than 12 days/year. The requirement to obtain access permits for authorized recreation activities in the ACEC would have moderate long-term negative effects on recreation resources in the ACEC because the opportunities for motorized and non-motorized would be substantially reduced, even though they would continue to be available in the ACEC.

Under this alternative, user conflicts would continue to be an issue in areas where there is competition for non-motorized and motorized use within the same travel ways. Individual conflicts are short-term but the occurrence would continue over the long term or permanently. This would be considered a minor, long-term adverse impact to non-motorized recreationists. Although, limits on annual visitor use days would have major long-term adverse impacts to motorized recreationists and OHV recreation in CCMA.

Education and Interpretation

Same as Alternative A.

4.1.5.2 Impacts from Other Management Actions

Energy and Minerals

Major energy and mineral exploration/development is unlikely within CCMA based on the underlying geology and health and safety concerns associated with the presence of asbestos. However, under this alternative the area would be open to lode claims and the development of a mine operation would

potentially have long-term adverse impacts to recreation in CCMA because mine development would preclude recreation use in mined areas and would generally increase asbestos exposure and emissions in the Serpentine ACEC.

Cultural and Paleontological Resources

Same as Alternative A.

Travel and Transportation Management

Route network is the same as Alternative A.

The Dry Season Use Restrictions would be extended from April 15th through December 1st, which would further reduce the visitor use season by 12 weeks and limit access to CCMA more than 60% of the year. Wet Season Use Restrictions would continue using established or improved methods as they become available. Under this alternative, visitors will be limited in their use by days/year based on the EPA and BLM risk assessment models and activity-based air sampling data gathered during the 'wet season', which is the time of year CCMA is open to the public.

4.1.5.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

4.1.6 Impacts to Recreation from Alternative C

4.1.6.1 Impacts from Recreation Management Actions

Recreation Uses and Demand

Alternative C would authorize full size vehicles on County roads and designate 150 miles of existing routes for "single track/motorcycle use only"; and visitors under the age of 18 would be prohibited in the ACEC. The Condon Peak and Cantua Zones would continue to be managed for hunting via ATV and full size vehicle as well as non-motorized recreation opportunities. Pedestrian recreational opportunities like hobby gem and mineral collection would continue to be available throughout the Serpentine ACEC.

Age restrictions, loss of route mileage and change in designations would present major long term adverse impacts on minors and ATV/4WD user groups. On the other hand, this alternative would provide major long-term benefits for (adult) motorcycle recreation by emphasizing development and maintenance of single-track trails in the Serpentine ACEC.

Education and Interpretation

Same as Alternative A.

4.1.6.2 Impacts from Other Management Actions

Energy and Minerals

Same as Alternative B.

Cultural and Paleontological Resources

Same as Alternative A.

Travel and Transportation Management

The transportation network would have major long-term adverse impacts on access for all user groups other than motorcycles and full-size vehicles. Access would also further be limited to users 18 years of age and older, negatively impacting young visitors and family recreation in the ACEC. Since the county road network would be the only available routes to full size vehicles, access to areas off of major roads would also be permanently adversely impacted.

4.1.6.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

4.1.7 Impacts to Recreation from Alternative D

4.1.7.1 Impacts from Recreation Management Actions

Recreation Uses and Demand

Alternative D would only authorize full-size vehicles on County roads and BLM routes identified on Map D in the ACEC. These restrictions on allowable uses would have major long-term adverse impacts on OHV recreation in the ACEC. However, under this alternative, BLM would matintain 24.5 miles of designate dopen routes in the Condon management zone, and develop approximately 60 miles of trails to promote OHV recreation opportunities on public lands in the Cantua and Tucker management zones. BLM would also maintain exisitng campgrounds (Oak Flat, Jade Mill, and Condon) and establish new campgrounds, staging areas to support OHV recreation in the Cantua Zone, as well as lands surrounding Tucker Mountain. These new OHV recreation opportunities would provide moderate long-term benefits to OHV recreation in Central California and off-set some of the adverse impacts from prohibiting OHV recreation in the ACEC; although the quality and quantity of OHV recreation opportunities would still be diminished compared to Alternatives A, B, and C.

Education and Interpretation

Same as Alternative A.

4.1.7.2 Impacts from Other Management Actions

Energy and Minerals

Mineral leasing or sales within the Serpentine ACEC would not adversely to recreation opportunities under this alternative. The withdrawal of public lands in the ACEC from locatable mineral entry would have long term beneficial impacts to recreation by reducing use conflicts between mine operations and recreationists. Conflicts for gem and mineral collection, increased asbestos emissions due to mine operations, and adverse impacts to the viewshed would be avoided.

Cultural and Paleontological Resources

Same as Alternative A

Travel and Transportation Management

Transportation and access within the Serpentine ACEC would be greatly restricted with expanded opportunities developed in the surrounding Zones. Since the dry season route network will be the only available routes within the Serpentine ACEC, access to some areas may be pedestrian only.

4.1.7.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

4.1.8 Impacts to Recreation from Alternative E

4.1.8.1 Impacts from Recreation Management Actions

Recreation Uses and Demand

Alternative E would allow motorized access inside the ACEC for full-size vehicles from the CCMA entrance near New Idria on Spanish Lake Road to Wright Mountain. Access would be authorized by permit only for less than 5 days/year for vehicle access and less than 12 days/year for pedestrian use. Gates would be installed where necessary to control access. Facilities such as pull-outs and parking areas would be developed in areas exhibiting unique recreational values, such as SBMRNA/WSA, Wright Mountain, and other scenic points of interest.

Alternative E would have major adverse impacts on motorized recreation in CCMA. Up to 65.5 miles of routes would be available in the entire CCMA. Only highway-licensed vehicles would be allowed on the designated route system. Access for hobby gem and mineral collection would be adversely impacted by route closures and could significantly increase time required for hiking to and from collecting sites. Hikers and hunters would be afforded access along the route to designated points of interest for natural and cultural resources. Public recreation opportunities in the ACEC would be further adversely impacted by requiring permits for access that limit annual visitor use days to a set number of days in the ACEC for recreation purposes.

Special recreation permits for hobby gem and mineral collection would be issued on a case-by-case basis. Under this alternative, the requirement to obtain a special recreation permit for rockhounding would have negligible impact on CCMA visitors because the opportunities for hobby gem and mineral collection would continue to be available in the ACEC.

Pedestrian access would be enhanced slightly based upon improvements to trail system and reduced conflicts with motorized vehicles. Facilities such as pull-outs and parking areas would be developed in areas exhibiting unique recreational values, such as SBMRNA/WSA, Wright Mountain parking access to Joaquin Rocks and other scenic points of interest. The Cantua and Tucker zones would be managed for non-motorized recreation opportunities, while the Condon zone would maintain existing route management objectives (RMOs). In general, these management actions would have moderate long-term benefits for non-motorized recreation outside the Serpentine ACEC; however, health and safety mitigation measures that limit annual visitor use days would have moderate long-term adverse impacts on

non-motorized recreation visitors in the Serpentine ACEC because these recreation opportunities would be restricted to less than 12 days/year.

The restrictions on allowable uses under Alternative E would have major long-term adverse impacts on OHV recreationists due to the complete loss of OHV opportunities in CCMA. These displaced users would seek OHV opportunities in other recreation areas that provide OHV access, like State Vehicular Recreation Areas (SVRAs), Metcalf County Park, Frank Raines County Park, and BLM's Jawbone Area of Critical Environmental Concern, which would most likely become more congested. This would have indirect negative effects on these and other OHV areas as increased visitor use would place higher demands on the recreation infrastructure, budget resources, and natural resources; as well as presenting safety concerns as conflicts among impacted groups/individuals will become more frequent,

Education and Interpretation

Informational and interpretive panels would be developed and placed at strategic locations along the access route.

4.1.8.2 Impacts from Other Management Actions

Energy and Minerals

Under this alternative, 30,000 acres of public lands within the Serpentine ACEC would be unavailable for mineral leasing or sales and withdrawn from locatable mineral entry. These land use allocations would have a minor long-term beneficial impact on recreation resources by preserving wildlife habitat and other areas with recreation values from potential mineral leasing and development.

Cultural and Paleontological Resources

Same as Alternative A.

Travel and Transportation Management

Transportation and access would be severely limited in scope throughout the Serpentine ACEC, with pedestrian access the only available option outside of the Spanish Lake Road corridor. New opportunities would become available as developed in the surrounding zones.

4.1.8.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

4.1.9 Impacts to Recreation from Alternative F

4.1.9.1 Impacts from Recreation Management Actions

Recreation Uses and Demand

Alternative F would restrict ACEC recreation access to pedestrian traffic and require written access authorization for all other uses necessarily consistent with management goals and objectives. The restrictions on allowable uses under Alternative F would have major long-term adverse impacts on OHV

and motorized recreation opportunities, as well as mechanical and equestrian opportunities due to the complete loss of OHV opportunities in CCMA. These displaced users would seek OHV opportunities in other recreation areas that provide OHV access, like State Vehicular Recreation Areas (SVRAs), Metcalf County Park, Frank Raines County Park, and BLM's Jawbone Area of Critical Environmental Concern, which would most likely become more congested. This would have indirect negative effects on these and other OHV areas as increased visitor use would place higher demands on the recreation infrastructure, budget resources, and natural resources; as well as presenting safety concerns as conflicts among impacted groups/individuals will become more frequent,

Access and facilities in other zones would be improved to support allowable uses throughout CCMA, with all zones managed for non-motorized recreation. BLM would matintain 24.5 miles of designated open routes in the Condon management zone. BLM would also maintain exisitng campgrounds (Oak Flat, Jade Mill, and Condon). These improvements would have moderate beneficial impacts for non-motorized recreation.

Under this alternative, hobby gem and mineral collection would be authorized within the Serpentine ACEC by permit only. The requirement to obtain permits for hobby gem and mineral collection would have minor short term negative effects on visitors that must learn to acquire the necessary approval before visiting CCMA. On the other hand, health and safety mitigation measures that limit annual visitor use days would have moderate long-term adverse impacts on these recreation visitors because the opportunity for rockhounding in the Serpentine ACEC would be restricted to approximately 12 days/year.

Education and Interpretation

Informational and interpretive panels would be developed and placed at strategic locations both within the Serpentine ACEC as well as in the surrounding management zones.

4.1.9.2 Impacts from Other Management Actions

Energy and Minerals

Under this alternative, 30,000 acres of public lands within the Serpentine ACEC would be unavailable for mineral leasing or sales and withdrawn from locatable mineral entry. These land use allocations would have a minor long-term beneficial impact on recreation resources by preserving wildlife habitat and other areas with recreation values from potential mineral leasing and development.

Cultural and Paleontological Resources

Same as Alternative A.

Travel and Transportation Management

Transportation and access would be severely limited in scope throughout the Serpentine ACEC, with pedestrian access the only available option. New opportunities would become available as developed in the surrounding zones.

4.1.9.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

4.1.10 Impacts to Recreation from Alternative G

4.1.10.1 Impacts from Recreation Management Actions

Recreation Uses and Demand

Alternative G would prohibit public recreation inside the ACEC. Cantua and Tucker Mtn. zones would be managed for non-motorized recreation and Condon Peak zone would be limited to full-sized vehicles and ATVs on designated routes with a new staging area established along Los Gatos Creek Road.

Complete closure of the Serpentine ACEC would have the most significant and long-term adverse impacts on recreation opportunities among the range of alternatives because all forms of public entry in to the ACEC would be prohibited and no new recreation resources would be developed in other zones, except for the route from Coalinga-Los Gatos Road to Condon Peak, which would provide minor benefits for non-motorized recreation in the Condon Peak area.

Education and Interpretation

Informational and interpretive panels would be developed and placed at strategic locations in the management zones surrounding the Serpentine ACEC.

4.1.10.2 Impacts from Other Management Actions

Energy and Minerals

Under this alternative, all public lands within the CCMA (66,500 acres) would be unavailable for mineral leasing or sales and withdrawn from locatable mineral entry. These land use allocations would only have a minor long-term beneficial impact on recreation resources because the potential for mineral leasing and development on CCMA public lands is low.

Cultural and Paleontological Resources

Same as Alternative A.

Travel and Transportation Management

With the Serpentine ACEC completely closed to public access, the surrounding management zones would sustain all transportation networks and provide the only public access to the region.

4.1.10.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

4.1.11 Impacts to Recreation from the Proposed Action

4.1.11.1 Impacts from Recreation Management Actions

Recreation Uses and Demand

Under the Proposed Action, Clear Creek Management Area would remain a SRMA. Recreation would be governed by BLM manuals and policy, and the Hollister Field Office would incorporate health risk information into public outreach and educational materials to improve human health and safety. Designation of CCMA as a SRMA would preserve BLM's ability to plan, expand, or restrict certain uses, and adequately plan for future recreation use in this popular management area, resulting in major, long-term, beneficial impacts to recreational opportunity in these areas.

Human health risks and impacts to natural and cultural resources associated with allowable uses and recreation opportunities in CCMA would be mitigated through management actions and restrictions. Motorized and non-motorized recreation have varying levels of access and use restrictions in each of the five management zones based on EPA's Asbestos Exposure and Human Health Risk Assessment (2008). Areas outside the Serpentine ACEC will likely become more popular as BLM implements public health and safety measures in the ACEC.

The Proposed Action would allow motorized access inside the ACEC for highway-licensed vehicles on the scenic route of approximately 32 miles (Appendix I, Proposed Action Map). The designated route network would provide access to Wright Mountain, Goat Mountain, and the Clear Creek and San Benito River watersheds. Facilities such as pull-outs and parking areas would be developed in areas exhibiting unique recreational values, such as SBMRNA/WSA, Wright Mountain, and other scenic points of interest.

BLM also proposes to install gates to control public access on CCMA roads in order to reduce risks to public health and safety because the existing use of these roads can expose public visitors to excess lifetime cancer risks. Access to the ACEC would be allowed only by access permit and would be limited to 5 days for motorized recreation and 12 days for non-motorized recreation, in order to reduce asbestos exposure to acceptable risk levels, based on the potential for excess lifetime cancer risk calculated in EPA's risk assessment. Prohibiting camping and requiring permits to limit annual visitor use days in the ACEC would only have moderate long-term adverse impacts to recreationists in CCMA because most visitors only recreate in the Planning Area for 5 – 12 days/year and camping would still be available at the Oak Flat and Jade Mill Campgrounds.

In general, the Proposed Action would provide moderate long term benefits to non-motorized recreation opportunities within the ACEC because motorized access would be maintained and visitor use conflicts would be reduced, and because it includes development of new recreation facilities and campgrounds in Condon and Cantua Zones to promote allowable uses in these areas.

On the other hand, these Proposed Action would have major long term adverse impacts to OHV (motorized) recreation opportunities in the ACEC because the miles of routes and trails available for OHV use would be reduced by more than 75% from the previously designated 242 miles of routes that were approved for OHV use in the 2006 ROD for CCMA Route Designation. Furthermore, limiting motorized access to highway licensed vehicles and ATV/UTV's would eliminate all single-track trail riding opportunities on public lands in the CCMA.

Additionally, special recreation permits (SRPs) for organized events would not be allowed in the ACEC, and these restrictions would have major long-term negative impacts on OHV clubs and groups that have historically held competitive motorcycle races, jeep tours, and other events; as well as any other organizations or clubs that promote group activities in the Serpentine ACEC. SRPs would be authorized outside the ACEC, however this would not likely make up for the lost opportunities in the ACEC.

The Proposed Action would also have minor long-term adverse effects on other existing recreation resources due to limits on annual visitor use days in CCMA. For example, hikers and hunters would continue to be afforded access to a large portion of the ACEC along the *Scenic Touring* Route to designated points of interest for these activities, with negligible long term impacts. Hobby gem and minerals collection (rock-hounding) and hunting would also continue to be popular activities in CCMA, however, both activities would be limited to day use and other restrictions due to human health risks from exposure to asbestos in CCMA. In particular, staging for recreational activities and overnight camping in the ACEC would be prohibited, with the exception of visitor use at Jade Mill for camping based on the following rationale. Upper Jade Mill campground is underlain by non-serpentine soils and poses a minimal health risk. BLM first identified the Jade Mill site for development of recreation facilities in the Hollister RMP (BLM, 1984); and as a result, the Upper Jade Mill site remains a favorite camping location and consistently receives heavy use. These use restrictions would have minor long-term negative impacts on all types of recreation use in the ACEC, including motorized and non-motorized activities, because of the decrease in facilities within the ACEC to support these visitor uses.

The Proposed Action promotes enhancing recreation opportunities within CCMA as a whole by developing recreation access and new recreation facilities in the Tucker, Condon, and Cantua Zones, which would provide long term benefits to recreation resources since they will no longer be exclusive to the ACEC. Pedestrian access would be enhanced slightly based upon improvements to trail system and reduced conflicts with motorized vehicles. Facilities such as pull-outs and parking areas would be developed in areas exhibiting unique recreational values, such as SBMRNA/WSA, Wright Mountain parking access to Joaquin Rocks and other scenic points of interest, including Goat Mountain. The Cantua and Tucker zones would be managed for non-motorized recreation opportunities, while the Condon zone would maintain existing route management objectives (RMOs) for access for non-motorized activities. In general, these management actions would have moderate long-term benefits for non-motorized recreation outside the Serpentine ACEC

Indirect impacts related to recreation use of the ACEC, would increase as restrictions on allowable uses increase and recreation opportunities decrease. These restrictions would displace thousands of OHV recreationists, who would end up seeking OHV recreation opportunities in other County, State or Federal recreation areas. Many of these other areas are smaller than CCMA and additional visitors would contribute to overcrowded conditions and additional impacts to the human environment in those areas. Overcrowding can lead to increased conflicts among user groups, decreases in recreational quality and experience, and adverse impacts to other resources like vegetative cover, wildlife habitat, soil loss and erosion, and water and air quality.

Conflicts with Other Uses or Adjacent Property Owners, or Among User Groups

Under the Proposed Action, the change in allowable uses and recreational opportunities throughout the Planning Area, would decrease the potential for these conflicts due to substantial reductions in annual visitor use and the change in types of uses inside the ACEC and other management zones. Under the Proposed Action, some level of conflict would still likely exist between hiker/hunters vs. motorized recreationists. This conflict would be minor and localized, and primarily be an issue at the developed recreation facilities, where motorized and non-motorized users with diverse attitudes would be sharing facilities.

Management actions associated with mineral and energy development may preclude recreational activity at certain locations and times. Currently, recreation users are restricted from entering public lands that are part of the Atlas and KCAC mine sites. Active and inactive mine sites have negative impact on the viewshed of the area for recreation users. Increased traffic associated with active mine operations would

increase asbestos emissions and pose an additional health risk to recreation users. Existing hard rock mining claims and newly established claims will prohibit access to public lands by amateur rockhounding enthusiasts.

Education and Interpretation

Under the Proposed Action, the Hollister Field Office would provide recreation information such as maps, brochures, and educational opportunities to enhance the public's experience on BLM public lands; by incorporating the best available information concerning: asbestos health hazards, OHV use designations, fire prevention, BLM regulations, and natural resources of the area into these educational materials. By incorporating the best available information on human health risks from CCMA recreation activities and other BLM regulations, the Hollister Field office interpretation and education program would provide moderate long-term benefits to CCMA recreation visitors.

The Proposed Action would allow the construction of new or upgraded facilities, depending on the availability of funding and partnerships, including signage, wayside exhibits, and kiosks, and therefore potentially would cause increased demand for public services (e.g. restrooms, picnic areas, more parking) at remote areas like Condon Peak and Cantua Zone. These efforts would result in moderate benefits for the awareness and understanding of CCMA resources for recreation visitors, and minor adverse effects on law enforcement patrols and emergency services.

Visitor Use Fees

The Proposed Action would allow BLM the flexibility to continue visitor use fees. Use fees may exclude or detract certain visitors from participating in the activity for which the use fee is established. While this could adversely impact some visitors, most public land visitors are willing to pay a small fee for recreation opportunities in CCMA, and collection of visitor use fees could help improve recreation facilities and reduce the negative impacts associated with overcrowding or other environmental impacts. Overall, the adverse effects of visitor use fees would be outweighed by these potential benefits

4.1.11.2 Impacts from Other Management Actions

Biological Resources

Management actions for biological resources may preclude recreational activities at certain times in order to conduct restoration or scientific activities. These would be done on a limited basis in a limited area. In the short-term, the closure to recreation of these areas would be a temporary, negligible to minor adverse impact; however, in the long-term, users could appreciate the enhanced natural surroundings.

Livestock Grazing

Rangeland management activities would not appreciably impact opportunities for recreation. The presence of cattle near recreation sites may or may not affect the activities occurring at the site, or have an impact on the users' enjoyment of the landscape, depending on personal preference. Rangeland health is not a major factor in the determination of closure for routes in CCMA. Thus little impact to recreation resources and activities is anticipated.

Energy and Minerals

Under the Proposed Action, 30,000 acres of public lands within the Serpentine ACEC would be unavailable for mineral leasing or sales and recommended for withdrawal from locatable mineral entry. These land use allocations would have a minor long-term beneficial impact on recreation resources by preserving wildlife habitat and other areas with recreation values from potential mineral leasing and development.

However, past mining activities have adversely impacted the view shed and have created asbestos emissions in association with road construction and vehicle traffic. Existing lode claims in the area would continue to conflict with certain recreation opportunities because rock hounds cannot recreate on sites with active lode claim. Likewise, future development of mine operations could create additional conflicts with other uses due to increased equipment use and potential for higher asbestos emissions.

Some oil and gas development has occurred in the Cantua area historically, and future development of energy and minerals anywhere in the CCMA would have potential conflicts with recreation opportunity and use. However, development of oil and gas on BLM-administered lands is not reasonably foreseeable and future mining activities outside the ACEC are also unlikely due to environmental constraints.

Cultural and Paleontological Resources

The Proposed Action provides adequate protection of these resources. If a special resource is encountered or if a special study is under way, recreation may be restricted from that area for a limited time. The restricted area would likely be small, and a fence or barrier would be erected. This impact would generally be localized and short-term and would not result in any noticeable changes to recreation use or opportunity.

Travel and Transportation Management

Vehicle use on all BLM lands would be limited to designated routes under all alternatives. All barrens would be designated closed. Additionally, highway-licensed vehicle traffic on the designated roads and trails would increase incrementally over time, and might show increases due to displaced use from closed roads and areas. However, a shift in emphasis from heavily motorized use in the ACEC to primarily non-motorized use outside the ACEC would disperse vehicle use and might reduce overall use of some roads, and bring about a minor to moderate beneficial long-term impact to the character of the landscape that contribute to the value of recreation opportunities in the CCMA.

The environmental consequences for travel and transportation management are described in detail in Section 4.3.

Lands and Realty

Under all alternatives, the BLM could enhance recreation opportunities on public lands by acquiring lands that offer unique or desirable opportunities, or that allow increased or improved access. Acquiring access for non-motorized recreation opportunities in the Tucker and Cantua Zones would be a beneficial long term effect for meeting recreation demand for dispersed recreation. Because these actions would be highly subject to availability of funding and/or appropriate lands for acquisition, impacts can only be addressed at a general level. A detailed description of potential acquisitions and disposals of lands by Alternative is described in Section 4.18.

4.1.11.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

4.1.12 Cumulative Effects of Management Alternatives

Cumulative effects of BLM's land use decisions vary among the range of alternatives, though the proposed limits on allowable uses and BLM management actions to reduce human health risk from exposure to asbestos in CCMA would all have some adverse impacts on recreation resources in the Planning Area, as restrictions on visitor use, particularly within the Serpentine ACEC, would send recreationists to other BLM areas or to other County, State or Federal recreation areas. Alternatives A, B, C, and D would have moderate beneficial cumulative effects on recreation resources in the region because they would continue to allow OHV recreation and motorized access for non-motorized recreation opportunities in the Serpentine ACEC and other management zones within CCMA. The opportunities available in CCMA for OHV recreation would benefit recreation users in the region and resources within other recreation areas by dispersing the impacts of motorized and non-motorized recreation on public lands.

Long-term adverse cumulative effects would most likely occur under Alternatives E, F and G because these alternatives effectively eliminate OHV use as it has historically occurred within CCMA and would permanently displace user groups that would be forced to seek opportunity elsewhere. These cumulative effects would all have major long-term adverse impacts on motorized and non-motorized recreation opportunities in the planning area.

4.1.13 Cumulative Effects of Proposed Action

Cumulative effects of BLM's land use decisions from proposed limits on allowable uses and other management actions to reduce human health risk from exposure to asbestos in CCMA would have some adverse impacts on recreation resources in the Planning Area, as restrictions on visitor use, particularly within the Serpentine ACEC, would send recreationists to other BLM areas or to other County, State or Federal recreation areas that are identified in Section 3.1.3.

In particular, the Proposed Action considered in this RMP/EIS would have major long-term negative cumulative impacts on OHV recreation opportunities at existing vehicle recreation areas within a 2-4 hour drive of the Planning Area because it would effectively eliminate OHV use as it has historically occurred within CCMA and would permanently displace user groups that would be forced to seek opportunity elsewhere. While restrictions to motorized use in CCMA would likely result in increased use of other OHV recreation areas, it is unlikely that these other OHV use areas would grow significantly because they are already operating under regulatory limitations and budget constraints at existing use levels. As use of these areas increases, these impacts could become more problematic. Refer to Section 4.3.3 for more information on the cumulative effects of BLM's proposed travel and transportation management decisions on OHV use.

On the other hand, the Proposed Action would have minor long term beneficial cumulative impacts on other recreation resources in the region because it would reduce visitor use conflicts and improve public health and safety while continuing to allow non-motorized recreation opportunities in the Serpentine ACEC and other management zones within CCMA.

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4.2 Hazardous Materials and Public Health & Safety

For ease of reference, the management goals from Chapter 2 are reiterated here:

- The goals for hazardous materials and public safety management are to (1) protect public health and safety and environmental resources by minimizing environmental contamination from past and present land uses (i.e., abandoned mine lands) on public lands and on BLM-owned and operated facilities; (2) comply with Federal, State, and local hazardous materials management laws and regulations; (3) maintain the health of ecosystems through assessment, cleanup, and restoration of contaminated lands; (4) manage the costs, risks, and liabilities associated with hazardous materials so that the responsible parties and not the government bear the brunt of financial liabilities; and (5) integrate environmental protection and compliance with all environmental statutes into BLM activities.

4.2.1 Introduction

BLM's mission to sustain the health diversity and productivity of the public lands for the use and enjoyment of present and future generations includes efforts to minimize and reduce threats from releases of hazardous substances that could have an impact on the health, diversity, and productivity of the public lands as well as on the health and safety of the individuals who utilize and work on these lands. The Federal Land Policy and Management Act of 1976 requires that BLM actions comply with approved standards for public health and safety. Of particular concern to BLM are the safety impacts related to abandoned mines, debris flows, and hazardous materials.

Under all the management alternatives and the Proposed Action, BLM would continue to ensure proper handling of hazardous materials and wastes; identify mine-related, illegal dumps and other public land hazards, eliminating or mitigating them as soon as possible; and identify and resolve mining-related trespasses, especially public safety conflicts occurring with visitor use.

4.2.1.1 Assumptions

Asbestos Exposure Scenarios for Recreation Activities

The CCMA Asbestos Exposure and Human Health Risk Assessment (EPA 2008) analyzed excess lifetime cancer risk under the current management situation (No Action Alternative) based on the average number of hours visitors spend in the ACEC conducting different types of recreation activities. The same recreation scenarios are presented in this PRMP/FEIS to estimate human health risk from exposure to asbestos while conducting different types of recreation activities in the Serpentine ACEC. BLM modified the number of hours visitors spent in the ACEC for each recreation scenario based on public comments on the Draft RMP/EIS, as illustrated in Table 4.2-1 below. The scenarios were then analyzed by EPA toxicologists to determine the human health risk associated with each activity. The results of the EPA analysis are presented in Tables 4.2-2 to 4.2-9 below.

The following general principles were used to calculate the human health risk from exposure to asbestos presented in Tables 4.2-2 to 4.2-9.

1. Risk calculations will be performed for the 30-year adult, 30-year combined (12-year child + 18 year adult), and 12-year child exposures.
2. Risk calculations for each scenario will be performed for mean air concentrations and the 95% upper confidence limit (UCL).

3. Risk calculations will be performed using both the IRIS and OEHHA Unit Risks.
4. Risk calculations will be performed for 1, 5 (Reasonable Maximum Exposure), and 12 (High Estimate Exposure) visiting days per year.

The following assumptions were also incorporated into the human health risk information presented in Tables 4.2-1 to 4.2-9.

5. Visitor use scenarios are presented with estimates of time spent traveling on routes in the ACEC only, based on average speeds identified below:
   i. County Roads: 10-15 mph (full-sized vehicles), ~20 mph (OHV)
   ii. Dry Season (and Scenic) Routes: 10-15 mph (full-sized vehicles)
   iii. Single Track Trails: 15-20 mph (motorcycles only)
   iv. Proposed Routes: 10-15 mph (full-sized vehicles), ~20 mph (OHV)

6. Scenarios/activities need to include 1 hour (+/-) for stopping and parking in ACEC
7. Camping and staging at Jade Mill Campground = NO RISK because of administrative improvements and engineered controls to minimize exposure and reduce emissions at the site.
8. Risk calculations for hiking and hunting would be representative of <u>all</u> non-motorized use (i.e. rockhounding).
9. Drive time and duration of non-motorized use (hiking/hunting) would vary by access location and destination, which is why time estimates increase under Alternatives D, E, and F. (i.e. 4 hr. drive-time and 8 hrs hiking/day).
10. Risk calculation for "drive-in/drive-out" based on SUV sampling data.
11. Risk calculations do not incorporate reduction value from proposed Health & Safety Mitigation Measures because they cannot be quantified.
12. A qualitative evaluation of the mitigation measures effectiveness would be incorporated into the determination of whether alternatives provide overall protection of human health and the environment.

Table 4.2-1 (below) identifies the visitor use scenarios and modified exposure estimates under the range of alternatives and the Proposed Action analyzed in the CCMA Proposed RMP and Final EIS.

Table 4.2-1 Visitor Use Scenarios and Average Time Estimate in ACEC under the Range of Alternatives

Alternative:	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**Proposed Action**
	Adult and children	**Adult and children**	**Adult only**	**Adult only**	**Adult only**	**Adult only**		**Adult only**
Scenario 1: Weekend Riding	Drive in (1 hour) Motorcycle (6 hours Saturday) Camping (9 hours Saturday) Sleeping (8 hours) Camping (3 hours Sunday) Motorcycle (5 hours Sunday) Drive out (1 hour) Decon washing and vacuum (1 hour)	Motorcycle/ATV (4 hours Sat.) Motorcycle/ATV (3 hours Sun.) Vehicle washing (1 hour)	Motorcycle only (4 hours Sat.) Motorcycle (3 hours Sun.) Vehicle washing (1 hour)	SUV (4 hours) Vehicle washing (1 hour)	NA	NA	NA	NA
Scenario 2: Day Use Riding	Drive in (1 hour) Staging (1 hour) ATV (6 hours) Staging (1 hour) Drive out (1 hour) Decon washing and vacuum (1 hour)	Motorcycle/ATV (6 hours) Vehicle washing (1 hour)	Motorcycle only (6 hours) Vehicle washing (1 hour)	SUV (4 hours) Vehicle washing (1 hour)	NA	NA	NA	SUV (4 hours)

Table 4.2-1 Visitor Use Scenarios and Average Time Estimate in ACEC under the Range of Alternatives (cont.)

Alternative:	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**Proposed Action**
	Adult and children	**Adult and children**	**Adult only**	**Adult only**	**Adult only**	**Adult only**		**Adult only**
Scenario 3: Day Use Hiking	Drive in (1 hour) Staging (.5 hour) Hiking (6 hours) Staging (.5 hour) Drive out (1 hour)	SUV (4 hours) Hiking (4 hours) Vehicle washing (1 hour)	SUV (4 hours) Hiking (4 hours) Vehicle washing (1 hour)	SUV (4 hours) Hiking (4 hours) Vehicle washing (1 hour)	SUV (4 hours) Hiking (4 hours) Vehicle washing (1 hour)	Hiking (8 hours)	NA	SUV (4 hours) Hiking (4 hours)
Scenario 4: Weekend Hunting	Drive in (1 hour) Hiking (8 hours Saturday) Camping (7 hours Saturday) Sleeping (8 hours) Camping (2 hours Sunday) Hiking (6 hours Sunday) Drive out (1 hour) Decon washing and vacuum (1 hour)	SUV (4 hours) Hiking (2 hours Saturday) Hiking (2 hours Sunday) Vehicle washing (1 hour)	SUV (4 hours) Hiking (2 hours Saturday) Hiking (2 hours Sunday) Vehicle washing (1 hour)	SUV (4 hours) Hiking (2 hours Saturday) Hiking (2 hours Sunday) Vehicle washing (1 hour)	SUV (4 hours) Hiking (2 hours Saturday) Hiking (2 hours Sunday) Vehicle washing (1 hour)	Hiking (2 hours Sat.) Hiking (2 hours Sun.)	NA	NA
Scenario 4a: Day Use Hunting								SUV (4 hours) Hiking (2 hours)

4.2.2 Limits and Constraints of the Analysis

4.2.2.1 Incomplete or Unavailable Information

The BLM's analysis of public health and safety in this PRMP/FEIS is based primarily on the EPA's CCMA Asbestos Exposure and Human Health Risk Assessment (2008). The EPA report identifies the limits and constraints of the analysis, which are summarized below. This information is relevant to evaluating the reasonably foreseeable impacts to human health and the environment, and is essential to a reasoned choice among the range of alternatives considered in the PRMP/FEIS.

The constraints include areas of uncertainty within the EPA's risk assessment and other incomplete or unavailable information that affect BLM's evaluation of reasonably foreseeable effects on the human environment. In particular, BLM was unable to quantify reductions in human health risk and asbestos emissions from implementation of mitigation measures because reliable data on the effectiveness of surface hardening techniques or dust suppression on roads in CCMA cannot be obtained because of cost and feasibility issues. Therefore, BLM's evaluation of such impacts is based upon theoretical approaches or research methods discussed in the EPA's risk assessment and this RMP/EIS that are generally accepted in the scientific community.

For the purposes of analyzing human health risks from exposure to asbestos in CCMA, BLM shall incorporate by reference the definition of "reasonably foreseeable" from 40 CFR 1502.22(b)(4), which "includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason."

4.2.2.2 Exposure and Risk Uncertainties

The CCMA Asbestos Exposure and Human Health Risk Assessment (EPA, 2008) identifies all relevant areas of uncertainty in order to provide the public and BLM managers an understanding of the associated areas of uncertainty to make informed decisions to manage the risk of exposure to asbestos in CCMA.

As stated in the executive summary of the risk assessment (EPA, 2008; pg. ES-6):

> "The assessment of risk as a probability of an outcome always has unknown values that are estimated in health protective ways to ensure that the risks are neither underestimated nor grossly overestimated. The largest uncertainty in the assessment of risk to users of CCMA is that the risk evaluation only assesses excess lifetime cancer risk. It is known that asbestos causes debilitating and fatal diseases other than cancer, such as respiratory and pleural disease. The non-cancer effects are not quantitatively taken into account in the assessment because there is no asbestos toxicity value for non-cancer health effects, even though non-cancer effects could actually be more significant to total disease outcome from CCMA asbestos exposure. Therefore, the general probability of developing disease from exposure related to activities at Clear Creek may be significantly underestimated in the report. Uncertainties related to the exposure parameters in the CCMA assessment that could cause the estimated risk to be less or greater than the actual risk include: the frequency of exposure and the time actually engaged in dust-generating activities; the effect of the exposures on children; and the representativeness of the areas used for the sampling as accurate models of typical CCMA conditions. One exposure that was not measured, and which could cause the exposure and risk to be higher, is the continued exposure that results when asbestos fibers from CCMA are taken home in vehicles and on equipment. Uncertainty related to the toxicity parameters of the risk characterization includes the application of the IRIS and

> OEHHA asbestos toxicity values, which were developed from epidemiological studies of occupational exposures, to infrequent and episodic recreational exposures. This uncertainty could mean that the actual risks could be much lower than those estimated in the CCMA assessment. Another uncertainty, adjustments for early lifetime childhood exposures, could mean that the actual risks are higher than those estimated in the report."

In conclusion, the major uncertainties inherent in the assessment of exposure to asbestos at CCMA and the resulting estimate of risk include factors that may cause the EPA calculated risks to be overestimated or underestimated. Nevertheless, the disease potential of asbestos is recognized by the EPA, the Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA), the California EPA and Department of Toxic Substances Control (DTSC), the National Academy of Sciences, and the World Health Organization (WHO). While there is on-going research on the relative potencies of the different mineral forms of asbestos, there is consensus in the medical and public health community that both chrysotile and amphibole asbestos cause disease.

4.2.2.3 Epidemiology of Chrysotile Asbestos

During development of the CCMA Asbestos Exposure and Human Health Risk Assessment and scoping meetings for the CCMA RMP/EIS, many public comments expressed concern about the lack of an epidemiological study specific to CCMA visitors that provides empirical evidence of asbestos-related disease from exposure while conducting recreational activities.

In the Record of Decision for the Atlas Asbestos Mine Superfund Site (1991), EPA addressed comments from the public questioning the lack of asbestos-related health and epidemiological studies of the local population. In response, EPA stated "because the local population is small, an epidemiological study restricted to this population would probably not be sensitive enough to detect the incidence of asbestos related disease, even if it is occurring at an unacceptable rate." Furthermore, census data shows that California's Central Coast population is highly transitory and includes visitors or residents that travel from long distances or move in and out of the area at a rate that would further limit the efficacy of epidemiological studies of asbestos–related illnesses.

The World Health Organization (WHO) report titled "Chrysotile Asbestos" (1998) states under conclusions and recommendation for protection of human health, "exposure to chrysotile asbestos poses increased risks for asbestosis, lung cancer and mesothelioma in a dose-dependent manner. No threshold has been identified for carcinogenic risks." The WHO report reflects the collective view of an international group of experts, and was published under the joint sponsorship of the WHO, the United Nations Environment Programme, and the International Labour Organization; and produced within the framework of the Inter-Organization Programme for the Sound Management of Chemicals.

The WHO Environmental Health Criteria (EHC) program was initiated with the following objectives:

1) to assess information on the relationship between exposure to environmental pollutants and human health, and to provide guidelines for setting exposure limits;
2) to identify new or potential pollutants;
3) to identify gaps in knowledge concerning the health effects of pollutants;
4) to promote the harmonization of toxicological and epidemiological methods in order to have internationally comparable results.

Since that time, many EHC studies have been devoted to evaluating toxicological methodology, while numerous other publications have been concerned with epidemiological guidelines and evaluation of short-term tests for carcinogens. According to the WHO and EPA, the disease potential of asbestos is established by at least 40 epidemiological studies.

The WHO report (1998) states: "Commercial grades of chrysotile have been associated with an increased risk of pneumoconiosis[4], lung cancer and mesothelioma in numerous epidemiological studies of exposed workers." Whereas, "the non-malignant diseases associated with exposure to chrysotile comprise a somewhat complex mixture of clinical and pathological syndromes not readily definable for epidemiological study." Therefore, the primary focus of most epidemiological studies has been asbestosis among workers exposed to chrysotile in different occupational settings.

These studies have broadly demonstrated exposure-response or exposure-effect relationships for chrysotile-induced asbestosis. However, they all acknowledge that uncertainties still remain with regard to diagnosis of asbestos–related illnesses and the possibility of disease progression on cessation of exposure. Furthermore, risk estimates vary among the available studies. The reasons for the variations are related to uncertainties in exposure estimates, as described in Section 4.2.2.2 above.

The WHO report goes on to say the "estimation of the risk of mesothelioma is complicated in epidemiological studies by factors such as the rarity of the disease, the lack of mortality rates in the populations used as reference, and problems in diagnosis and reporting." However, the report does claim "there is evidence that fibrous tremolite causes mesothelioma in humans", and since approximately 8% of EPA's air samples from the CCMA Asbestos Exposure and Human Health Risk Assessment (2008) contained fibrous tremolite, exposure to asbestos in CCMA may contribute to mesotheliomas in CCMA visitors, even though they are exposed primarily to chrysotile.

4.2.2.4 Estimates of Asbestos Emissions Reductions, Cost, Effectiveness, and Feasibility of Mitigation Measures

Table 3.3-1 identifies potential mitigation measures for management of transportation and roads to reduce asbestos emissions. The BLM's analysis of feasibility for implementation management alternatives and the Proposed Action are based on the estimates associated with the cost and effectiveness in meeting resources management goals and objectives, including reducing and minimizing human health risk from exposure to asbestos. These estimates are based on best available information at the time the CCMA PRMP/FEIS was prepared, and are described in more detail under Travel and Transportation Management in Chapter 3, Table 3.3-1.

The analysis of cost and effectiveness in reducing asbestos emissions from surface hardening, dust suppression, and a variety of soil stabilizers on CCMA roads treatments and other mitigation measures is presented qualitatively because information on the effectiveness of these mitigation measures specific to CCMA is currently unavailable. Therefore, BLM developed the estimates outlined in Table 3.3-1 based on an EPA evaluation of asbestos mitigation measures prepared in 1981, and a study conducted by the California Department of Toxic Substances Control (DTSC) that briefly evaluated reductions in emissions on roads in areas with serpentine soils.

[4] Pneumoconiosis is defined as any chronic disease of the lungs characterized by lung fibrosis and possible loss of lung function, as caused by repeated inhalation of particulate matter, especially mineral or metallic dust particles.

In the study titled "A Study of Airborne Asbestos from a Serpentine Road in Garden Valley, California" (April 2005), DTSC studied airborne asbestos along a privately maintained road in El Dorado County. The DTSC study concluded that unimproved roads surfaced with serpentine aggregate pose a significant risk to public health, and that resurfacing the serpentine aggregate road with a multi-layered chipseal surface resulted in a dramatic reduction in airborne asbestos emissions. The study also found that airborne asbestos was detected at greater distances than visible dust, but the level of airborne asbestos decreased with distance from roads. Nevertheless, the study suggests that local conditions on other serpentine roads, like those in CCMA may have different results due to factors such as wind, concentrations of asbestos fibers in the road surfacing material and native soils, moisture conditions, and topography.

As a result, BLM anticipates that air sample results would show lower asbestos emissions after the serpentine aggregate on CCMA roads is covered and sealed with the road surfacing materials described in Appendix V; and that dust emissions on those roads would continue to remain low. However, due to the concentrations of asbestos in the serpentine soils in CCMA, weather conditions, and the presence of 'fugitive dust' that contains asbestos fibers previously deposited on vegetation, rocks, and soils adjacent to CCMA roads could be re-suspended by wind and air disturbances from passing vehicles would still pose a risk to human health following surface hardening and dust suppression or other mitigation measures on CCMA roads.

Many of the other mitigation measures considered in the range of alternatives and the Proposed Action for the CCMA PRMP/FEIS are also limited to qualitative analysis because there is no information available on the effectiveness of such measures as restricting annual visitor use days/year, vehicle types, installing vehicle wash racks, enforcement of speed limits, indemnification of risk, and other administrative actions in reducing exposure to asbestos emissions in CCMA. However, the unavailable information identified above is not critical to making a reasoned analysis of Alternatives A – G or the Proposed Action because the estimates outlined in Table 3.3-1, and the qualitative analysis of other mitigation measures in Section 4.2.4 can be used to inform the BLM and the public on the cost and effectiveness of the mitigation measures for public health and safety. Regardless of the location, resources conditions, and levels of use on roadways, all mitigation measures on routes in the ACEC would have to be monitored and evaluated for effectiveness in reducing asbestos emissions to meet the purpose and need of the CCMA RMP/EIS for overall protection of human health and the environment.

4.2.3 Overview of Impacts to Public Health & Safety from Hazardous Materials

In general, all the hazardous materials and public safety management actions in the range of alternatives and the Proposed Action would contribute to meeting the BLM's goals and objectives, because they are designed to improve the overall environmental resource protection and public safety for public land uses. However, Alternative A (No Action Alternative) would have major negative impacts to public health and safety by increasing the public's long-term risk of contracting cancer associated with exposure to asbestos from CCMA.

Alternatives B and C would have minor beneficial impacts to human health and the environment, compared to Alternative A, because Alternatives B and C include administrative management actions and other projects to reduce asbestos emissions in CCMA.

Other management actions to minimize asbestos exposure included under alternatives D and E would result in moderate beneficial impacts to environmental resource protection and public safety, compared to Alternatives B and C, because of further limits on allowable uses, as well as other projects to reduce asbestos emissions in CCMA.

Finally, alternatives F and G would have major long-term benefits to human health and the environment, compared to all the other alternatives, because allowable uses would reduce asbestos emissions to dust generated by foot traffic (Alt. F), or BLM would minimize asbestos exposure by prohibiting all public use and entry into the Serpentine ACEC (Alt. G).

Under the Proposed Action, land use allocations and other administrative management actions to minimize asbestos exposure included (i.e. permitting access, supplementary rules) would result in moderate beneficial impacts to environmental resource protection and public safety; especially when compared to the Alternatives A - D, because of increased limits on allowable uses and reduced asbestos emissions from BLM management activities in CCMA.

Other authorized BLM activities involving hazardous materials or wastes that could impact public land resources under the range of alternatives and the Proposed Action include rangeland improvements, energy and minerals development, and lands and realty. Under all alternatives, BLM land use authorizations and permits for these activities will incorporate requirements for the proper use, storage, and disposal of hazardous materials and wastes, such as petroleum products, pesticides, herbicides, lubricants, drilling wastes, waste waters, and mining wastes in compliance with Federal and state regulations.

4.2.3.1 CCMA Naturally Occurring Asbestos

Asbestos is the name given to a group of six different fibrous minerals that occur naturally in the environment. Asbestos fibers are too small to be seen by the naked eye. They do not dissolve in water or evaporate. They are resistant to heat, fire, and chemical or biological degradation. The two general types of asbestos are amphibole and chrysotile (fibrous serpentine). Chrysotile asbestos has long, flexible fibers. This type of asbestos is most commonly used in commercial products. Amphibole fibers are brittle, have a rod or needle shape, and are less common in commercial products. Although exposure to both types of asbestos increases the likelihood of developing asbestos-related diseases, amphibole fibers tend to stay in the lungs longer. They also are thought to increase the likelihood of illness, especially mesothelioma, to a greater extent than chrysotile asbestos.

Naturally occurring asbestos refers to those fibrous minerals that are found in the rocks or soil in an area and released into the air by routine human activities or weathering processes. If naturally occurring asbestos is not disturbed and fibers are not released into the air, then it is not a health risk. Asbestos is commonly found in ultramafic rock, including serpentine rock, and near fault zones. The amount of asbestos that is typically present in these rocks ranges from less than 1% up to about 25%, and sometimes more. Asbestos can be released from ultramafic and serpentine rock if the rock is broken or crushed.

Asbestos exposure results from breathing in asbestos fibers. If rocks, soil, or products containing asbestos are disturbed, they can release asbestos fibers into the air. These fibers can be breathed into your lungs and could remain there for a lifetime. Asbestos exposure is not a problem if ultramafic and serpentine rocks are left alone and not disturbed.

Elements that contribute to human health risks from asbestos exposure include, but are not limited to asbestos type and size of airborne fibers, frequency and duration of exposure to asbestos emissions, time since initial exposure to asbestos emissions, extent of exposure to asbestos emissions, and exposure to other pre-existing lung conditions. In particular cigarette smoking significantly increases risk of cancer associated with asbestos.

Children have more time to be exposed and develop asbestos-related diseases. Medical experts do not know whether lung differences may cause a greater amount of asbestos fibers to stay in the lungs of a child who breaths in asbestos compared with the amount that stays in the lungs of an adult.

Asbestos-related diseases can be cancerous or non-cancerous. Examples of non-cancerous asbestos related disease include asbestosis, which is a scarring of the lungs, and pleural diseases. Asbestosis is typically caused by very high exposure levels over a prolonged period of time, as seen in work-related asbestos exposure. Smoking increases the risk of developing asbestosis. Some late stage symptoms include progressive shortness of breath, a persistent cough, and chest pain.

Pleural changes or pleural plaques include thickening and hardening of the pleura (the lining that covers the lungs and chest cavity). Most people will not have symptoms, but some may have decreased lung function. Some people may develop persistent shortness of breath with exercise or even at rest if they have significantly decreased lung function.

Lung cancer is cancer of the lungs and lung passages. Cigarette smoking combined with asbestos exposure greatly increases the likelihood of lung cancer. Lung cancer caused by smoking or asbestos looks the same. Symptoms for lung cancer can vary. Some late stage symptoms can include chronic cough, chest pain, unexplained weight loss, and coughing up blood.

Lung cancer from all causes affects about 61 out of every 100,000 Americans a year. According to the American Cancer Society, it is the leading cause of cancer-related death in both men and women and accounts for about 29% of all cancer deaths. Asbestos exposure is only one of many potential causes of lung cancer. Cigarette smoking is by far the most important risk factor for lung cancer. Cigarette smoking combined with asbestos exposure greatly increases the likelihood of lung cancer.

Mesothelioma is a rare cancer mostly associated with asbestos exposure. It occurs in the covering of the lungs and sometimes the lining of the abdominal cavity. Some late stage symptoms include chest pain, persistent shortness of breath, and unexplained weight loss. Mesothelioma is relatively rare. According to the American Cancer Society, there are about 2,000 – 3,000 new cases per year in this country. It is most common in asbestos-related work exposure though it has been observed in certain communities worldwide where people have had lifetime exposures to naturally occurring asbestos. (DHHS, 2005).

4.2.3.2 CCMA Asbestos Exposure and Human Health Risk

The EPA Superfund program defines the acceptable risk range for exposure to a carcinogen, like asbestos, as 10^{-4} (1 in 10,000) to 10^{-6} (1 in 1,000,000) excess lifetime cancer risk. Exposures which are calculated to cause more than 1 in 10,000 excess cancers are considered to be of concern and may require action to reduce the exposure and resulting risk.

In 2004, as part of the process of evaluating the completeness of the Atlas Mine cleanup for possible delisting from the federal Superfund list, EPA Region 9 initiated an asbestos exposure and human health risk assessment for the CCMA. The goal of the assessment was to use current asbestos sampling and analytical techniques to update a 1992 BLM Human Health Risk Assessment and provide more robust information to BLM on the asbestos exposures from typical CCMA recreational activities and the excess lifetime cancer risks associated with those exposures.

The assessment was conducted consistent with U.S. EPA policy and guidance, including the Risk Assessment Guidance for Superfund (RAGS) (EPA/540/1-89/002), and with the encouragement of the

California Air Resources Board (CARB) and the California Department of Toxic Substances Control (DTSC).

In 2004 and 2005, Region 9 collected air samples while EPA employees and contractors participated in typical recreational activities at the Clear Creek Management Area. The samples were collected from the breathing zone of individuals riding motorcycles and all-terrain vehicles (ATV), driving and riding in sports utility vehicles (SUV), hiking, camping, sleeping in a tent, fence-building, and washing and vacuuming vehicles after use at CCMA. Sample cassettes were placed to collect air samples representing the breathing zone heights of both adults and children, and samples were collected for both lead riders and those trailing behind them. These activity based air samples were then analyzed for asbestos.

After the exposure data was collected for the various individual activities, the activities were used to calculate risk for seven CCMA use scenarios. Risk estimate calculations were then conducted for the scenarios. The scenarios were designed to make the risk estimations better reflect the typical activities an individual would participate in during a typical day or weekend visit to CCMA and to provide more useable information to BLM and the public regarding health risk associated with these activities. The scenarios were developed with input from BLM and DTSC. The report provides excess lifetime cancer risk estimates for the seven scenarios and is available on-line at:
http://www.epa.gov/region09/toxic/noa/clearcreek/index.html.

Exposure Assessment - Most of the asbestos found in the EPA air samples was short fiber (< 5 microns in length) chrysotile asbestos. However, only the fiber size which has been most closely linked to asbestos disease, the longer Phase Contrast Microscopy Equivalent or PCME fibers (> 5 microns long, 0.25 – 3.0 microns wide, > 3:1 aspect ratio) were used in the EPA exposure and risk assessment. The activity-based sampling showed that activities which disturbed the soil recorded significantly elevated asbestos levels in the breathing zone.

Risk Characterization – Importing the mean and 95% upper confidence level of the mean (UCL) exposure data into the scenarios, excess lifetime cancer risk was estimated using both the U.S. EPA Integrated Risk Information System (IRIS) and the California EPA Office of Environmental Health Hazard Assessment (OEHHA) cancer toxicity values for asbestos.

Calculations were prepared for 30-year adult exposures, as recommended by the Superfund risk assessment guidance. In addition, 30-year combined child and adult exposures (12 years as a child and then 18 years as an adult) and 12-year child exposures (a population which recreates with families from ages 6 to 18) were also evaluated. Risks were calculated for 1 visit per year, 5 visits per year (Reasonable Maximum Exposure), and 12 visits per year (High Estimate) for the recreational scenarios.

The risks are compared to the EPA Superfund program acceptable risk range for exposure to a carcinogen, like asbestos, of 10^{-4} (1 in 10,000) to 10^{-6} (1 in 1,000,000) excess lifetime cancer risk. Exposures which are estimated to cause more than 1 in 10,000 excess cancers are considered by EPA to be of concern and may require action to reduce the exposure and resulting risk.

There was no combination of scenario, toxicity value, or visits per year that was below the lower end of EPA's acceptable risk range, i.e. risks less than 1 in 1,000,000. Only Scenario 3 (Day Use Hiking) had risk calculations within the acceptable range. Using the IRIS toxicity value, as shown in the 2008 CCMA Asbestos Exposure and Human Health Risk Assessment (Figure ES-1), EPA's risk estimations found that making five or more visits to CCMA per year over a 30-year period to participate in recreational Scenarios 1 (Weekend Rider), 2 (Day Use Rider), 4 (Weekend Hunter), or 5 (Combined Rider/Workday) could put recreational users at an excess lifetime cancer risk above EPA's acceptable risk range of $1x\ 10^{-4}$

(1 in 10,000) to 1 in 10^{-6} (1 in 1,000,000). The highest IRIS risk estimation, 2 in 1,000 (2×10^{-3}), was based on the 95% UCL exposure concentration for 12 visits per year for recreational Scenario 1 (Weekend Rider).

Using the OEHHA toxicity value, even one visit per year for recreational scenarios 1, 2, 4, and 5, put users above EPA's acceptable risk range. The higher risks reflect the fact that the OEHHA asbestos toxicity value is 8 times larger than the value in IRIS. At the high end of the risk range, excess lifetime cancer risk estimations using the OEHHA toxicity value and the 95% UCL concentration indicate that recreational users riding motorcycles 12 weekends per year could have as much as a 1 in 100 (1×10^{-2}) lifetime chance of developing asbestos related cancer. It should be noted that neither the IRIS nor OEHHA values are designed for very high exposure levels, so the number calculated for the high-end risk has a higher degree of uncertainty than the numbers calculated for the lower exposure scenarios. However, the risks are still extremely high.

4.2.3.3 Risk Assessment Results

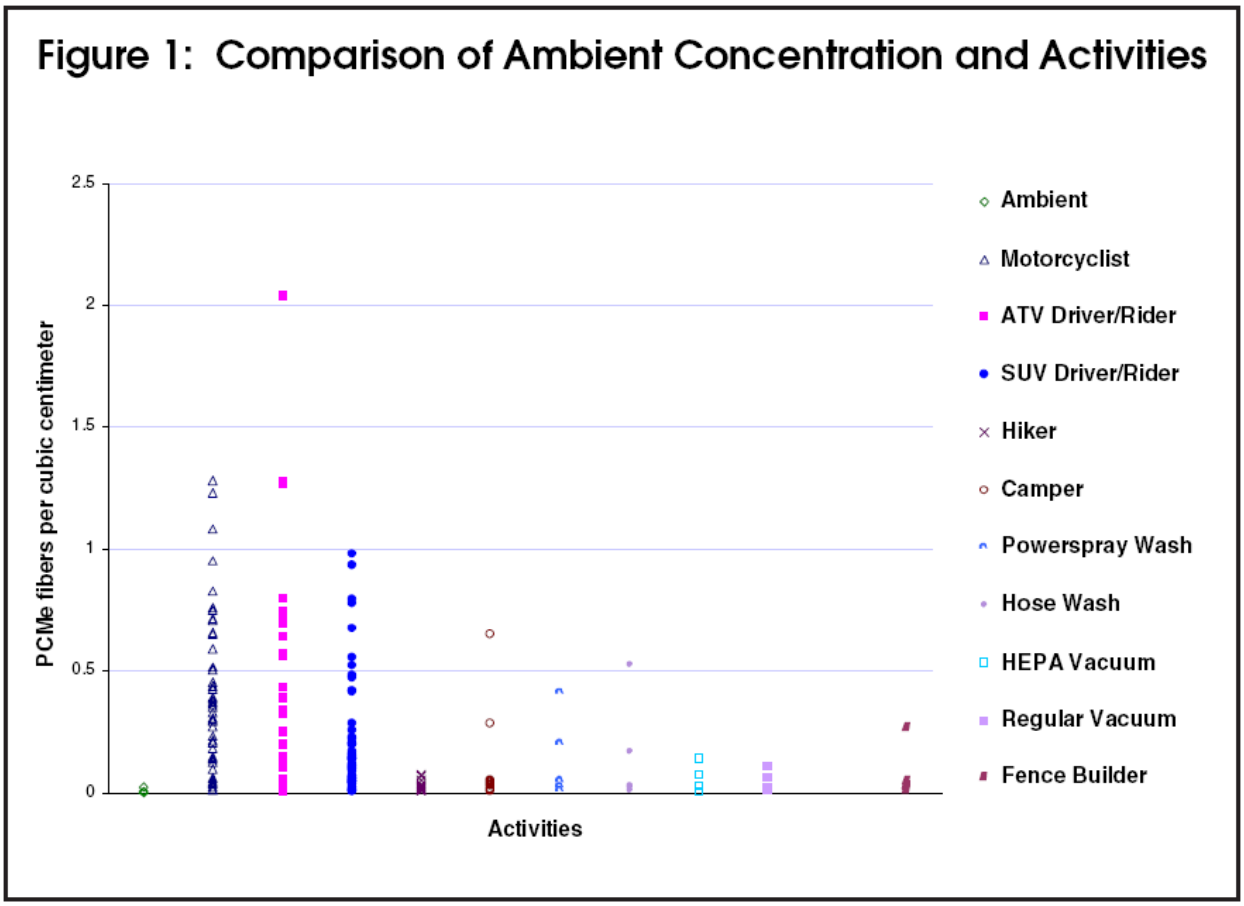
It is important to note that the EPA risk assessment presents quantitative estimates of excess cancer risk over a lifetime in a population based on the defined exposure scenarios. The scenarios have been designed to represent current and future exposures for recreational and working users of CCMA. The numbers do not predict individual exposures or individual health outcomes. It is also important to reiterate that the asbestos concentrations used by EPA in the CCMA Asbestos Exposure and Human Health Risk Assessment are based only on asbestos fibers known as phase contrast microscopy equivalent (PCME) fibers because they are the fibers whose shape and size have been most closely linked to asbestos disease.

The EPA Risk Assessment Guidelines recommend that risks be calculated using the reasonable maximum exposure (RME) that is expected to occur at a site under both current and future land-use conditions. Based on national recreational survey data and statements made by CCMA users, EPA and BLM estimated an RME for the CCMA of 5 visitor use per year. Some users indicated that they rode for longer periods and more frequently, so the risk analysis also considers a "high estimate" of 12 visits per year. To provide a low estimate of exposures and to facilitate the evaluation of the range of alternatives, 1 visit per year was also incorporated into the CCMA RMP/EIS risk assessment.

Since cancer risk from asbestos is a function of exposure concentration, duration of exposure, and time from first exposure, assessments of human health risks under each alternative are based on estimates of continuous lifetime exposure. Therefore, authorizations of access into the Serpentine ACEC by permit only to limit the number of visitor use days/year to 12 days for non-motorized recreation and 5 days for motorized activities would have major long-term benefits on human health and safety, compared to the No Action Alternative, because the total number of authorized visitor use days/year for any individual would be within the acceptable risk range for exposure to carcinogens.

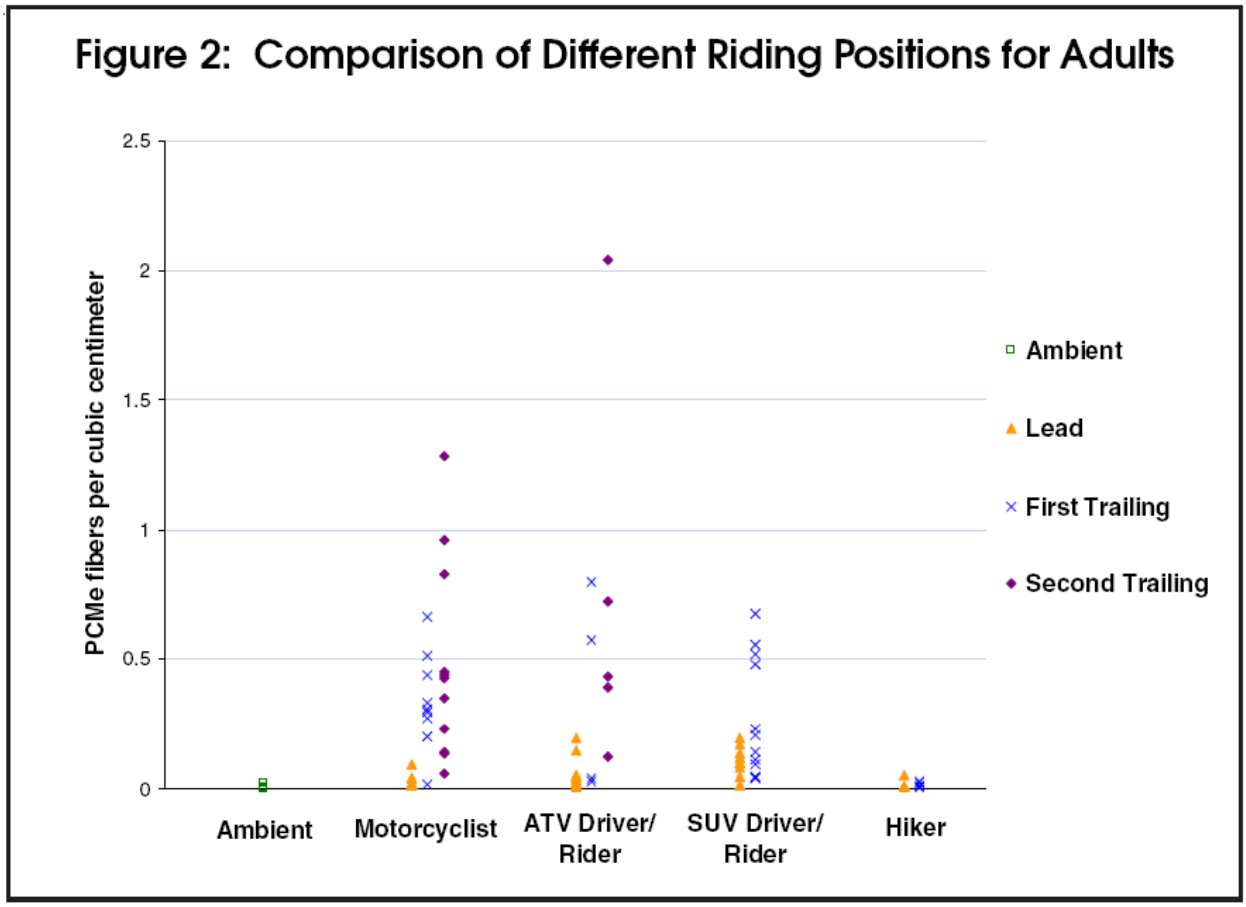
The Activity Drives the Exposure

Figure 1 shows the individual sample results for each activity and for measurements of CCMA ambient air. The data shows that the activities which typically create the most soil disturbance and dust, motorcycling, ATV driving/riding, and SUV driving/riding, also release the most asbestos into the breathing zone. In some instances, the concentration of asbestos measured in the EPA samples even exceeded what the U.S. Occupational Safety and Health Administration (OSHA) sets for workers as a 30-minute limit for asbestos.



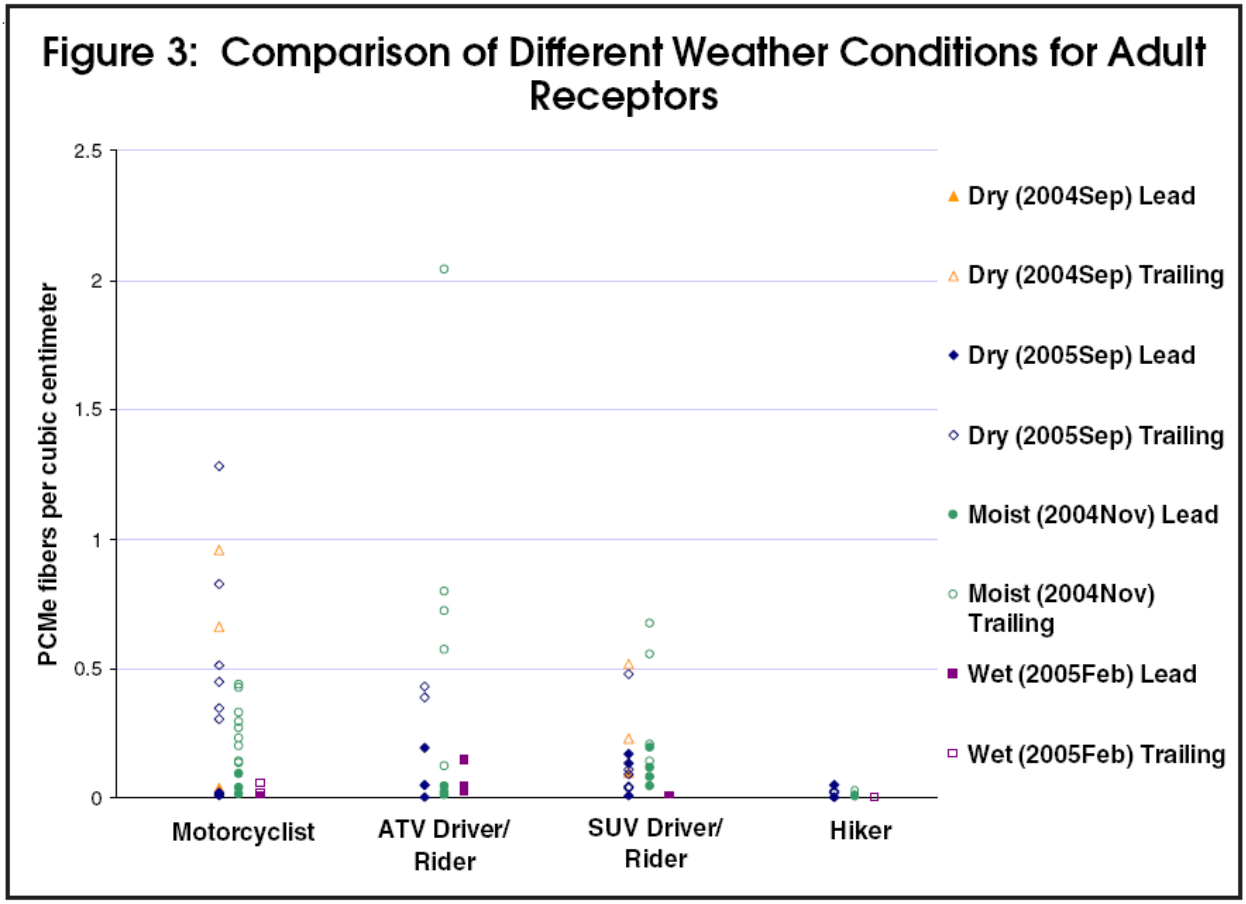
Position Is Important

Figure 2 shows the results for motorcycle riders in the lead and trailing behind and for ATV and SUV drivers/riders. First trailing drivers/riders encountered higher asbestos air concentrations than lead drivers/riders and second trailing drivers/riders typically encountered higher levels than first trailing drivers/riders. This means that the asbestos levels in the air increased with the larger dust clouds encountered by those riders following one or more riders ahead of them.



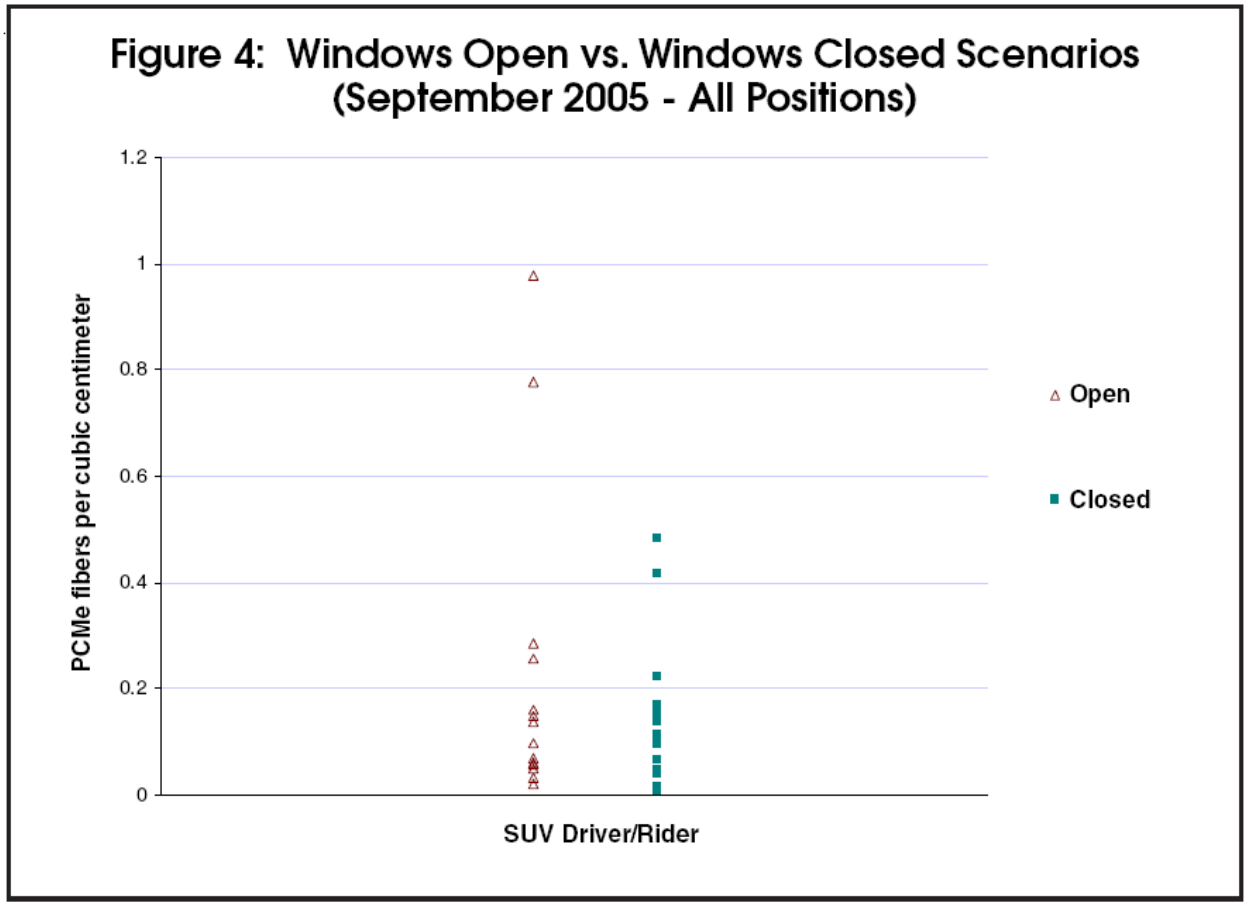
Wet Weather Reduces But Does Not Eliminate Exposure

Figure 3 shows the effect of sampling event weather conditions on asbestos air concentrations. Using rainfall patterns and on-site observations, the September 2004 and 2005 events were determined to be conducted under "dry" conditions, with little or no precipitation in the month prior to the event. The November 2004 event was designated as occurring under "moist" conditions, with two to three inches of rain in the two weeks before the event. The February 2005 events were conducted under "wet" conditions, with rain immediately before and during the events. Based on the sampling results, it appears that only active rainfall reduces asbestos air concentrations, although further study would be needed to define the exact conditions necessary to reduce dust generation and asbestos exposure.



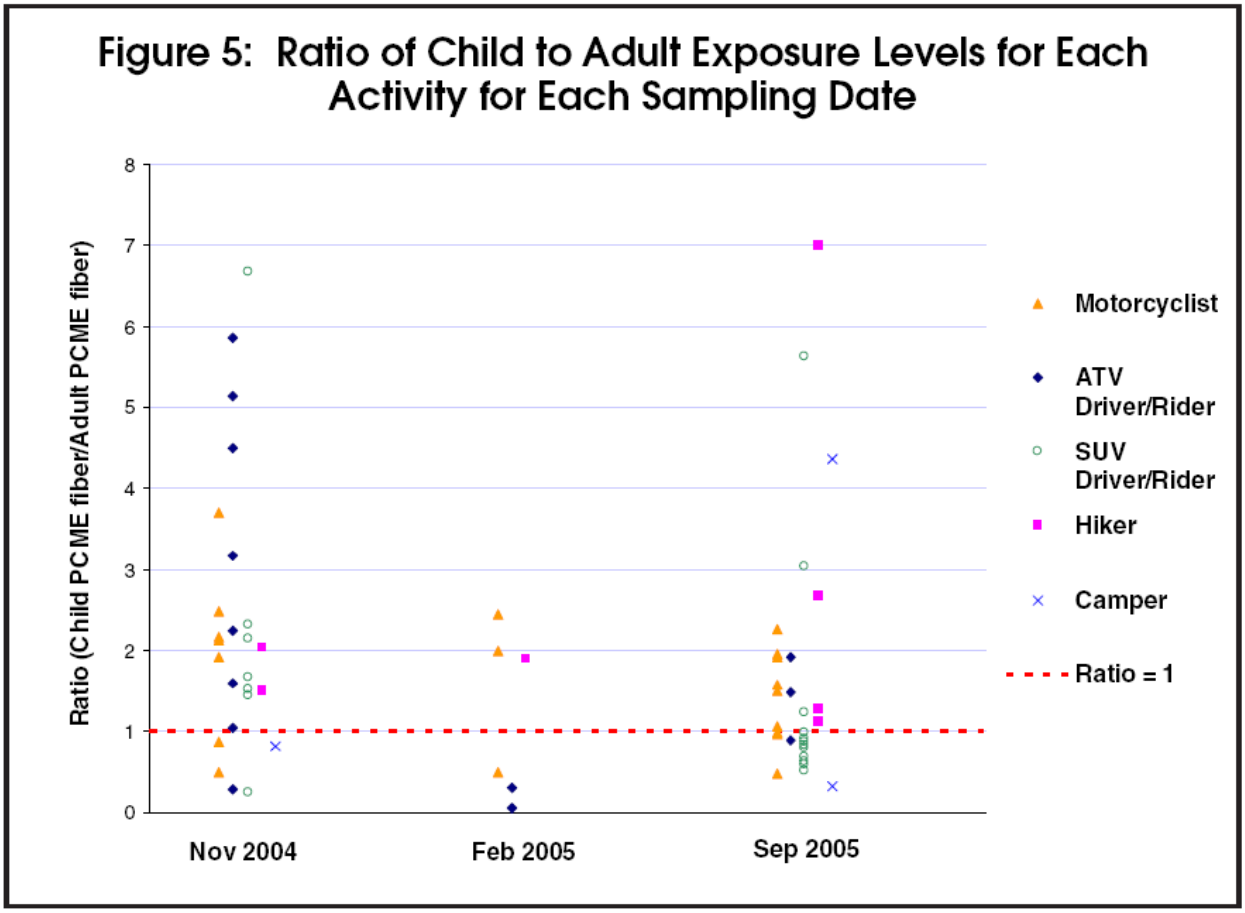
SUV Exposures Were Significant

As shown in Figure 4, driving on the unpaved CCMA access roads resulted in significant measured asbestos air concentrations inside the vehicles, even with the windows closed and the air system set to "recirculate".



Child Exposures Tend to Be Higher

Figure 5 shows the ratio between the child and adult samples collected at the same time on the same sampler. With the exception of the camping activity, the majority of child exposures exceeded the exposure recorded for the paired adult sample. In total, the asbestos concentration in the child sample exceeded the concentration in the adult sample 64% of the time.



Amphibole Asbestos was Detected in the Air Samples

While *chrysotile* asbestos was the predominant asbestos mineral type found in the EPA air samples, almost 8% of the PCME fibers were identified as tremolite, actinolite, or another amphibole asbestos mineral. There is an emerging consensus in the scientific community that amphibole asbestos may present an even greater health risk.

4.2.4 Impacts to Public Health & Safety from Alternatives A - G

It is important to note that the risk assessment of the range of alternatives presents quantitative estimates of excess cancer risk over a lifetime in a population based on the defined exposure scenarios and EPA risk assessment data collected for the CCMA Asbestos Exposure and Human Health Risks Assessment (2008). The scenarios have been designed to represent current and future exposures for recreational visitors of CCMA. The numbers do not predict individual exposures or individual health outcomes. The asbestos concentrations used by BLM in the CCMA RMP/EIS are based only on asbestos fibers known as phase contrast microscopy equivalent (PCME) fibers because they are the fibers whose shape and size have been most closely linked to asbestos disease.

Based on EPA risk assessment data collected for the CCMA Asbestos Exposure and Human Health Risks Assessment (2008), Alternatives B and C would result in similar risks to human health and safety as under Alternative A. Alternatives D and E would both have similar risk to human health because they both allow for motorized access and non-motorized recreation in the Serpentine ACEC. Alternative F

would reduce human health risk from exposure to asbestos more than Alternatives A-E because it would prohibit motorized access in the Serpentine ACEC. However, only Alternative G would truly minimize human health risks from exposure to asbestos in CCMA because it would prohibit public entry into the ACEC, thereby eliminating CCMA visitor exposure to airborne asbestos entirely.

This is described in Table 4.2-2, which compares risk to human health by each of the alternatives using the IRIS model for risk assessment. A comparison of risk to human health by each of the alternatives using the OEHHA model for risk assessment is also included in Table 4.2-3 (below). Shaded values are those above 1 x 10^{-4} (1 excess lifetime cancer per 10,000 exposed individuals), the upper end of the EPA risk range.

Table 4.2-2 IRIS Risk Summaries

	1 day		5 day		12 day	
	mean	95%UCL	mean	95%UCL	mean	95%UCL
Scenario #	Alternative A					
1-weekend riding	6.E-05	1.E-04	3.E-04	6.E-04	7.E-04	2.E-03
2-day use riding	3.E-05	6.E-05	2.E-04	3.E-04	4.E-04	7.E-04
3-dayuse hiking	6.E-06	1.E-05	3.E-05	6.E-05	8.E-05	1.E-04
4-weekend hunting	2.E-05	5.E-05	8.E-05	3.E-04	2.E-04	6.E-04
	Alternative B					
1-weekend riding	3.E-05	5.E-05	1.E-04	2.E-04	2.E-04	6.E-04
2-day use riding	2.E-05	4.E-05	1.E-04	2.E-04	3.E-04	5.E-04
3-dayuse hiking	1.E-05	2.E-05	6.E-05	1.E-04	1.E-04	3.E-04
4-weekend hunting	1.E-05	2.E-05	6.E-05	1.E-04	1.E-04	3.E-04
	Alternative C					
1-weekend riding	3.E-05	4.E-05	1.E-04	2.E-04	3.E-04	5.E-04
2-day use riding	2.E-05	3.E-05	1.E-04	2.E-04	3.E-04	4.E-04
3-dayuse hiking	9.E-06	2.E-05	5.E-05	9.E-05	1.E-04	2.E-04
4-weekend hunting	9.E-06	2.E-05	5.E-05	9.E-05	1.E-04	2.E-04
	Alternative D					
1-weekend riding	9.E-06	2.E-05	5.E-05	8.E-05	1.E-04	2.E-04
2-day use riding	9.E-06	2.E-05	5.E-05	8.E-05	1.E-04	2.E-04
3-dayuse hiking	9.E-06	2.E-05	5.E-05	9.E-05	1.E-04	2.E-04
4-weekend hunting	9.E-06	2.E-05	5.E-05	9.E-05	1.E-04	2.E-04
	Alternative E					
1-weekend riding	--	--	--	--	--	--
2-day use riding	--	--	--	--	--	--
3-dayuse hiking	1.E-05	2.E-05	6.E-05	1.E-04	1.E-04	3.E-04
4-weekend hunting	1.E-05	2.E-05	6.E-05	1.E-04	1.E-04	3.E-04
	Alternative F					
1-weekend riding	--	--	--	--	--	--
2-day use riding	--	--	--	--	--	--
3-dayuse hiking	2.E-06	2.E-06	8.E-06	9.E-06	2.E-05	2.E-05
4-weekend hunting	8.E-07	9.E-07	4.E-06	5.E-06	1.E-05	1.E-05

Note: Numbers shaded in gray are outside the EPA's acceptable risk range described in Section 4.2.4.1.
Scientific notation in the tables above reads as follows:
EPA's acceptable risk range = 1.E-04 to 1.E-06 *or* 1 X 10^{-4} (1 in 10,000) to 1 X 10^{-6} (1 in 1,000,000)

Table 4.2-3 OEHHA Risk Summaries

	1 day		5 day		12 day	
	mean	95%UCL	mean	95%UCL	mean	95%UCL
Scenario #	Alternative A					
1-weekend riding	5.E-04	1.E-03	2.E-03	5.E-03	6.E-03	1.E-02
2-day use riding	3.E-04	5.E-04	1.E-03	2.E-03	3.E-03	6.E-03
3-dayuse hiking	5.E-05	9.E-05	3.E-04	5.E-04	6.E-04	1.E-03
4-weekend hunting	1.E-04	4.E-04	7.E-04	2.E-03	2.E-03	5.E-03
	Alternative B					
1-weekend riding	2.E-04	4.E-04	1.E-03	2.E-03	3.E-03	5.E-03
2-day use riding	2.E-04	4.E-04	1.E-03	2.E-03	3.E-03	5.E-03
3-dayuse hiking	1.E-04	2.E-04	5.E-04	9.E-04	1.E-03	2.E-03
4-weekend hunting	1.E-04	2.E-04	5.E-04	9.E-04	1.E-03	2.E-03
	Alternative C					
1-weekend riding	2.E-04	4.E-04	1.E-03	2.E-03	3.E-03	5.E-03
2-day use riding	2.E-04	3.E-04	9.E-04	2.E-03	2.E-03	4.E-03
3-dayuse hiking	8.E-05	1.E-04	4.E-04	7.E-04	1.E-03	2.E-03
4-weekend hunting	8.E-05	1.E-04	4.E-04	7.E-04	1.E-03	2.E-03
	Alternative D					
1-weekend riding	8.E-05	1.E-04	4.E-04	7.E-04	9.E-04	2.E-03
2-day use riding	8.E-05	1.E-04	4.E-04	7.E-04	9.E-04	2.E-03
3-dayuse hiking	8.E-05	1.E-04	4.E-04	7.E-04	1.E-03	2.E-03
4-weekend hunting	8.E-05	1.E-04	4.E-04	7.E-04	1.E-03	2.E-03
	Alternative E					
1-weekend riding	--	--	--	--	--	--
2-day use riding	--	--	--	--	--	--
3-dayuse hiking	1.E-04	2.E-04	5.E-04	9.E-04	1.E-03	2.E-03
4-weekend hunting	1.E-04	2.E-04	5.E-04	9.E-04	1.E-03	2.E-03
	Alternative F					
1-weekend riding	--	--	--	--	--	--
2-day use riding	--	--	--	--	--	--
3-dayuse hiking	1.E-05	2.E-05	7.E-05	8.E-05	2.E-04	2.E-04
4-weekend hunting	7.E-06	8.E-06	3.E-05	4.E-05	8.E-05	9.E-05

Note: Numbers shaded in gray are outside the EPA's acceptable risk range described in Section 4.2.4.1. Scientific notation in the tables above reads as follows:
EPA's acceptable risk range = 1.E-04 to 1.E-06 *or* 1 X 10^{-4} (1 in 10,000) to 1 X 10^{-6} (1 in 1,000,000)

4.2.4.1 Impacts from Mitigation Measures for Alternatives A, B, C, and D

Under these alternatives mitigation measures to reduce risk to public health and safety include restricting the season of use, establishing supplementary rules to require waivers of risk, limiting annual visitor use days, enforcing speed limits, limiting vehicle types, hardening and dust suppression on major routes, and taking other corrective action(s) to comply with Federal, State, and local regulations.

Seasonal Use Restrictions

Under Alternative A, BLM would continue to enforce seasonal use restrictions to limit vehicle use to major roads in the Serpentine ACEC from June 1 to October 15. Alternatives B and C would further restrict the season of use from December 1 – April 15. Alternative D would allow vehicle use on major roads in the Serpentine ACEC all year-round. Human health risks from airborne asbestos exposure would be similar under all alternatives. Restricting the season of use would have negligible impacts on asbestos exposure and human health risk because EPA's CCMA AEHHRA (2008) explains that wet weather reduces but does not eliminate exposure. For example, the September 2004 and September 2005 sampling events were conducted under dry conditions, and the November 2004 sampling event was conducted within one week of a two day rainfall event that produced about one inch of precipitation in the CCMA area, and the preceding month of October was very rainy. During the November sampling event, low-lying areas contained standing water, while elevated areas were nearly dry. EPA further explains that many of the concentrations in the samples from the November event were actually higher than those measured in the September events, leading to a higher overall mean and 95% UCL for the "moist" event. Based on the EPA sampling, it appears that only active rainfall reduces asbestos air concentrations. Reasons why include topographic and soil factors affecting soil moisture such as slope, aspect, permeability, drainage and surface runoff, but further study would be necessary to define the exact conditions necessary to reduce dust generation. Additionally, because precipitation is so variable in the project area, it would be difficult to predict when conditions would typically be wet enough to reduce risk. As a result, seasonal use restrictions would only provide minor benefits for human health.

CHART-1C (below) shows, the EPA results for the dry season and the wet or "moist" season are comparable. There was no significant difference in the concentrations between dry and wet exposures.

CHART-1C: Comparison of Mean and 95% UCL for All Data[1] and Wet Season Data[2] – Riding Positions from motorcycling and ATV riding only.

Concentrations are PCME f/ml as defined in EPA's CCMA Asbestos Exposure and Human Health Risk Assessment (May 2008).

Position	No. Valid Data - All/Wet	No. Detected Data - All/Wet	All Mean	Wet Mean	Difference	Ratio Wet to All Mean	All UCL	Wet UCL	Difference	Ratio Wet to All UCL
Adult Lead	41/20	35/17	0.0673	0.0554	0.0119	0.8232	0.1040	0.1010	0.0030	0.9712
Adult First Trailing	37/20	34/17	0.2480	0.2720	-0.024	1.0968	0.3940	0.3300	0.0640	0.8376
Adult Second Trailing	17/10	16/9	0.5630	0.4800	0.083	0.8526	1.0790	1.2720	-0.1930	1.1789
Child Lead	36/17	33/14	0.0991	0.0971	0.002	0.9798	0.1660	0.1960	-0.0300	1.1807
Child First Trailing	31/14	31/14	0.3830	0.4760	-0.093	1.2428	0.5950	1.2770[3]	-0.682	2.9529
Child Second Trailing	17/10	17/10	0.5410	0.4880	0.053	0.9020	0.6730	0.6770	-0.0040	1.0059

1. All data includes results from Sept '04, Nov '04, Feb '05 and Sep '05.
2. Wet data includes results from only Nov '04 and Feb '05.
3. Maximum result, UCL exceeds max detected.

Waivers of Liability and Indemnification of Risk

During public scoping, authorization of access into the Serpentine ACEC based on signed waivers of liability (i.e. indemnification of risk), was identified as a potential mitigation measure to inform visitors of the health risk associated with exposure to asbestos to determine their own willingness to accept the risk of exposure to asbestos in CCMA. In other words, this measure would allow individuals to "ride at their own risk", and reflects the preferred approach identified by the majority of the public scoping comments. However, developing a waiver of liability, or establishing indemnification of risk, would have no beneficial impacts on public health and safety because neither approach would actually reduce exposure to airborne asbestos or improve overall protection of human health and the environment Therefore, the potential for waivers of liability or indemnification of risk as "stand-alone" mitigation measures for human health and safety do not satisfy the purpose and need for the CCMA RMP/EIS. Furthermore, these actions would likely have major long-term adverse impacts on human health and the environment due to the perception that exposure to airborne asbestos fibers above the acceptable risk range established under the EPA Superfund Act is permissible and authorized by the Federal government.

Limited Annual Visitor Use Days/Year (Access by Permit Only)

Under Alternative B, BLM would reduce risk to public health and safety by limiting annual visitor use days and requiring permits for access into the Serpentine ACEC.

The EPA Risk Assessment Guidelines for Superfund (RAGS) recommends that risks be calculated using the reasonable maximum exposure (RME) that is expected to occur at a site under both current and future land-use conditions. Based on national recreational survey data and statements made by CCMA users, EPA and BLM estimated an RME for the CCMA of 5 visitor use per year. Some users indicated that they rode for longer periods and more frequently, so the risk analysis also considers a "high estimate" of 12 visits per year. To provide a low estimate of exposures and to facilitate the evaluation of the range of alternatives, 1 visit per year was also incorporated into the CCMA RMP/EIS risk assessment.

Cancer risk from asbestos is a function of exposure concentration, duration of exposure, and time from first exposure. Therefore, requiring permits for access into the Serpentine ACEC to limit the number of visitor use days/year to less than 12 days for non-motorized recreation and less than 5 days for motorized activities would have major long-term benefits on human health and safety because the total number of authorized visitor use days/year for any individual would be within the acceptable risk range for exposure to carcinogens. There would be additional benefits to public health and safety from authorizing access permits because BLM would also provide asbestos awareness information and other educational outreach materials to further reduce public health risks to CCMA visitors.

Vehicle Wash Rack (Public Decontamination Facility)

The installation of vehicle wash racks is a mitigation measure proposed under Alternatives A, B, C, and D to reduce asbestos exposure by preventing the potential for "take home" or "track out" of serpentine soils that contain asbestos on vehicles and clothing, in order to minimize subsequent exposure to asbestos fibers from CCMA. If managed properly, installing vehicle wash racks would provide a major long-term benefit to public health and safety by reducing the potential for "track out" of asbestos laden soils and subsequent exposure to asbestos fibers from CCMA.

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Public comments from representatives of the American Motorcycle Association District 36 (and other planning participants within the OHV community) contend that the vast majority of riders would jump at the chance to wash off their vehicles before leaving the area and recommend the newly constructed decontamination facility be utilized as both a cleanup station and welcome center for arriving visitors. This would provide the opportunity for visitor outreach and education to explain CCMA resources concerns and land use management issues.

Although many CCMA visitors may be willing to use vehicle wash racks, it is not feasible to maintain the cost of operating a state-of-the-art decontamination facility to industrial hygiene standards for public use. Furthermore, the effectiveness of this mitigation measure is limited because only one vehicle can be decontaminated at a time and it is unclear whether there are water resources available for public use of the decontamination facility to support the visitor use levels under the range of alternatives.

Enforce Speed Limits on Major Routes (15-25 mph)

In April 2005, the California Department of Toxic Substances Control completed a report titled, "Study of Airborne Asbestos from a Serpentine Road in Garden Valley, California". The objectives of the study were to measure asbestos concentrations on the road segment under traffic patterns that represent typical driving speeds and vehicle frequency. Therefore, DTSC collected air samples based on a 25 mile per hour (mph) speed limit, and a 10 mph speed limit to compare asbestos emissions on the road. The results of these air samples were calculated in a risk assessment, and as could be expected, the lowest estimated risk is associated with NOA concentrations at the farthest distance from the road, the fewest vehicles, the lowest speeds. Nevertheless, even under low speeds, asbestos emissions were still measureable and the human health risk from exposure to airborne asbestos fibers persists.

Based on the results of the DTSC study, establishing speed limits on major routes in CCMA would have some long-term beneficial impacts on vehicle traffic and visitor safety by reducing potential for accidents and head-on collisions. However, reliance upon speed limits to mitigate human health risks from exposure to asbestos would have negligible long-term benefits because of the persistence of airborne asbestos emissions from vehicular traffic and fugitive dust on roadways.

Minimum Age Requirements and Limits on Vehicle Types

Under Alternative C, motorized access in the Serpentine ACEC would be limited to full-size vehicles and motorcycles on designated routes. Alternative D would prohibit motorcycle use in the ACEC and only allow full-sized vehicles on designated routes. Alternatives C and D would both limit use in the Serpentine ACEC to visitors 18 years of age or older.

The minimum age requirement would have major long-term benefits for children and visitors under age 18 because it would minimize their health risk from exposure to asbestos. On the other hand, there would be no reduction in risk to visitors by restricting the use of vehicles types, such as ATVs or UTVs, because the levels of exposure to airborne asbestos fibers and the associated risks to human health would be the same as existing conditions for motorcycles and full-size vehicles on routes and trails in the Serpentine ACEC.

Dust Suppression on OHV Routes and Trails

Multiple products are available for dust suppression on trails. The impacts and effectiveness of these mitigation measures are analyzed in Section 4.3, Travel and Transportation Management. Overall, application of suppressant would likely have major adverse impacts on OHV recreation, but major long-

term benefits for general vehicle use in the ACEC because these products provide a hardened, "capping" action that is only suitable for major routes and is not preferable to motorcycle or ATV users.

4.2.4.2 Impacts from Mitigation Measures for Alternatives E, F, and G

Seasonal Use Restrictions

Alternative E would allow vehicle use on major roads in the Serpentine ACEC all year-round. Under Alternative F, BLM would continue to enforce seasonal use restrictions to limit vehicle use to major roads in the Serpentine ACEC from June 1 to October 15. However, human health risks from airborne asbestos exposure would be similar because restricting the season of use would have negligible impacts. As shown in CHART-1C (Sec. 4.2.4.1), the EPA results for the dry season and the wet or "open" season are comparable. There was no significant difference in the concentrations between dry and wet exposures.

Alternative G would close the Serpentine ACEC to public use. This alternative would have the most long-term beneficial impacts on human health and safety of all the alternatives considered in this PRMP/FEIS because it would minimize human health risks associated with exposure to airborne asbestos fibers in the Serpentine ACEC.

Limited Annual Visitor Use Days/Year (Access by Permit Only)

Alternative E and F would also authorize access into the Serpentine ACEC by permit only for < 12 days for non-motorized recreation, and < 5 days for motorized activities. Requiring permits for access into the Serpentine ACEC to limit the number of visitor use days/year to less than 12 days for non-motorized recreation and less than 5 days for motorized activities would have major long-term benefits on human health and safety because the total number of authorized visitor use days/year for any individual would be within the acceptable risk range for exposure to carcinogens. There would be additional benefits to public health and safety from authorizing access permits because BLM would also provide asbestos awareness information and other educational outreach materials to further reduce public health risks to CCMA visitors.

Limits on Vehicle Types

Under Alternative D and E motorized access in the Serpentine ACEC would be limited to full-size vehicles on designated routes, which would minor long-term benefits on public health and safety because it would minimize the risk of exposure to asbestos for motorcycle riders and other visitors in the Serpentine ACEC. Although there would be no reduction in risk from asbestos exposure to visitors in full-size vehicles on routes and trails in the Serpentine ACEC, there would be some benefits to public safety from limiting vehicle types because there would be less potential for injuries and accidents associated with vehicle collisions.

Dust Suppression on OHV Routes and Trails

Multiple products are available for dust suppression on trails. The impacts and effectiveness of these mitigation measures are analyzed in Section 4.3, Travel and Transportation Management. Overall, application of suppressant would likely have major adverse impacts on OHV recreation, but major long-term benefits for general vehicle use in the ACEC because these products provide a hardened, "capping" action that is only suitable for major routes and is not preferable to motorcycle or ATV users.

4.2.5 Impacts to Public Health & Safety from the Proposed Action

BLM is required by Federal, State, and local regulations to collect, store, and dispose of hazardous materials and wastes appropriately. Impacts would be beneficial for environmental resource protection and the safety of the public by implementing the recommendations from the past and future Compliance Assessment Safety, Health, and Environment (CASHE) audits, which may include correcting deficiencies in storage of hazardous materials, disposal practices for hazardous wastes, and other possible findings identified in the CASHE audits. Additional beneficial impacts of management actions are related to monitoring for illegal dumping of chemicals on Federal lands to identify and cleanup potential impacts to the environment and public safety before the hazard migrates off-site and correcting abandoned mining-related and other public land hazards.

The presence of airborne asbestos dust, a known carcinogen, poses a potential human health risk in the serpentine portion of the CCMA. Studies have proven that the vast majority of airborne asbestos dust in the Clear Creek area is generated by human activities, primarily vehicle use. Motorized use on the *Scenic Touring* Route includes unpaved routes and would generate asbestos emissions and exposure to asbestos emissions in the ACEC for visitors.

Surface disturbing activities would only be permitted during periods when air concentrations of asbestos fall below OSHA action levels for a given activity. All BLM road maintenance and grading activities would be conducted in compliance with MBUAPCD ATCM for airborne asbestos, to prevent visible emissions during these operations. Education programs related to asbestos exposure and hazards would be expanded, and any new risk assessments would be incorporated into informational materials. Closure of all remaining mine areas and restricting vehicle access to these areas would further reduce public exposure to hazardous contaminants and transport of hazardous metals to streams and corresponding off-site transport.

Closure of the majority of routes and all barrens to motorized access and OHV recreation would contribute to an overall reduction in asbestos dust generation and its transport by wind off-site, and would contribute to lower levels of asbestos transported by water and reduced impacts to beneficial uses.

EPA risk assessment calculations prepared for the Proposed Action analyzed in this PRMP/FEIS are presented below in Table(s) 4.2-5(a), 4.2-5(b), and 4.2-5(c). Table(s) 4.2-5(d), 4.2-5(e), and 4.2-5(f) then provide a comparison of risk to human health under the range of alternatives (and the Proposed Action) analyzed in this PRMP/FEIS using the IRIS model for risk assessment. Finally, a comparison of risk to human health under the range of alternatives (and the Proposed Action) analyzed in this PRMP/FEIS using the OEHHA model for risk assessment is also included in Tables 4.2-6(a), 4.2-6(b), 4.2-6(c), 4.2-6(c), 4.2-6(d), 4.2-6(e), and 4.2-6(f). Shaded values are those above 1×10^{-4} (1 excess lifetime cancer per 10,000 exposed individuals), the upper end of the EPA risk range.

Table 4.2-5(a) Proposed Action – IRIS Summary Table

Day Use Rider

Combined Exposures, Adult Asbestos Cancer Risk:
Scenario 2 Day Use Rider (Motorcycle) (30-yr Exposure Duration)
Human Health Risk
Assessment
CCMA Asbestos Exposures (All Events)

Number of Visits/Year	Drive In (1 hour)	Drive In/Out (4 hours)	Sum of Combined Activities
Estimated Excess Lifetime Cancer Risk by Activity (Mean) Using IRIS Unit Risk			
1		**8E-06**	**8E-06**
5 (RME)		**4E-05**	**4E-05**
12 (High Estimate)		**1E-04**	**1E-04**
Estimated Excess Lifetime Cancer Risk by Activity (95 UCL) Using IRIS Unit Risk			
1		**1E-05**	**1E-05**
5 (RME)		**7E-05**	**7E-05**
12 (High Estimate)		**2E-04**	**2E-04**

Notes:
There is an automatic rounding function in Excel; therefore, some values in the summary table may be slightly different than values in the individual calculation tables.
RME = Reasonable Maximum Exposure
Bolded results = an excess lifetime cancer risk greater than 1E-06
Bolded results (Shaded) = an excess lifetime cancer risk greater than 1E-04

Table 4.2-5(b) Proposed Action – IRIS Summary Table

Day Use Hiker

Combined Exposures, Adult Asbestos Cancer Risk:
Scenario 3 Day Use Hiker (30-yr Exposure Duration)
Human Health Risk Assessment
CCMA Asbestos Exposures (All Events)

Number of Visits/Year	Drive In/Out (4 hours)	Hiking (4 hours)	Decon Vehicle Wash (0.5 hours)	Decon Vacuum (0.5 hours)	Sum of Combined Activities
Estimated Excess Lifetime Cancer Risk by Activity (Mean) Using IRIS Unit Risk					
1	**8E-06**	8E-07			**9E-06**
5 (RME)	**4E-05**	**4E-06**			**5E-05**
12 (High Estimate)	**1E-04**	**1E-05**			**1E-04**
Estimated Excess Lifetime Cancer Risk by Activity (95 UCL) Using IRIS Unit Risk					
1	**1E-05**	9E-07			**2E-05**
5 (RME)	**7E-05**	**5E-06**			**8E-05**
12 (High Estimate)	**2E-04**	**1E-05**			**2E-04**

Notes:
There is an automatic rounding function in Excel; therefore, some values in the summary table may be slightly different than values in the individual calculation tables.
RME = Reasonable Maximum Exposure
Bolded results = an excess lifetime cancer risk greater than 1E-06
Bolded results (Shaded) = an excess lifetime cancer risk greater than 1E-04

Table 4.2-5(c) Proposed Action – IRIS Summary Table

Day Use Hunting

Combined Exposures, Adult Asbestos Cancer Risk:
Scenario 4 Day-Use Hunter (30-yr Exposure Duration)
Human Health Risk Assessment
CCMA Asbestos Exposures (All Events)

Number of Visits/Year	Drive In/Out (4 hour)	Hiking (2 hours)	Decon Vacuum (0.5 hours)	Sum of Combined Activities
Estimated Excess Lifetime Cancer Risk by Activity (Mean) Using IRIS Unit Risk				
1	**8E-06**	4E-07		**9E-06**
5 (RME)	**4E-05**	**2E-06**		**4E-05**
12 (High Estimate)	**1E-04**	**5E-06**		**1E-04**
Estimated Excess Lifetime Cancer Risk by Activity (95 UCL) Using IRIS Unit Risk				
1	**1E-05**	5E-07		**1E-05**
5 (RME)	**7E-05**	**2E-06**		**7E-05**
12 (High Estimate)	**2E-04**	**6E-06**		**2E-04**

Notes:
There is an automatic rounding function in Excel; therefore, some values in the summary table may be slightly different than values in the individual calculation tables.
RME = Reasonable Maximum Exposure
Bolded results = an excess lifetime cancer risk greater than 1E-06
Bolded results (Shaded) = an excess lifetime cancer risk greater than 1E-04

Table 4.2-5(d) 1-day IRIS Risk Summary of Management Alternatives (A – F) and the Proposed Action (P)

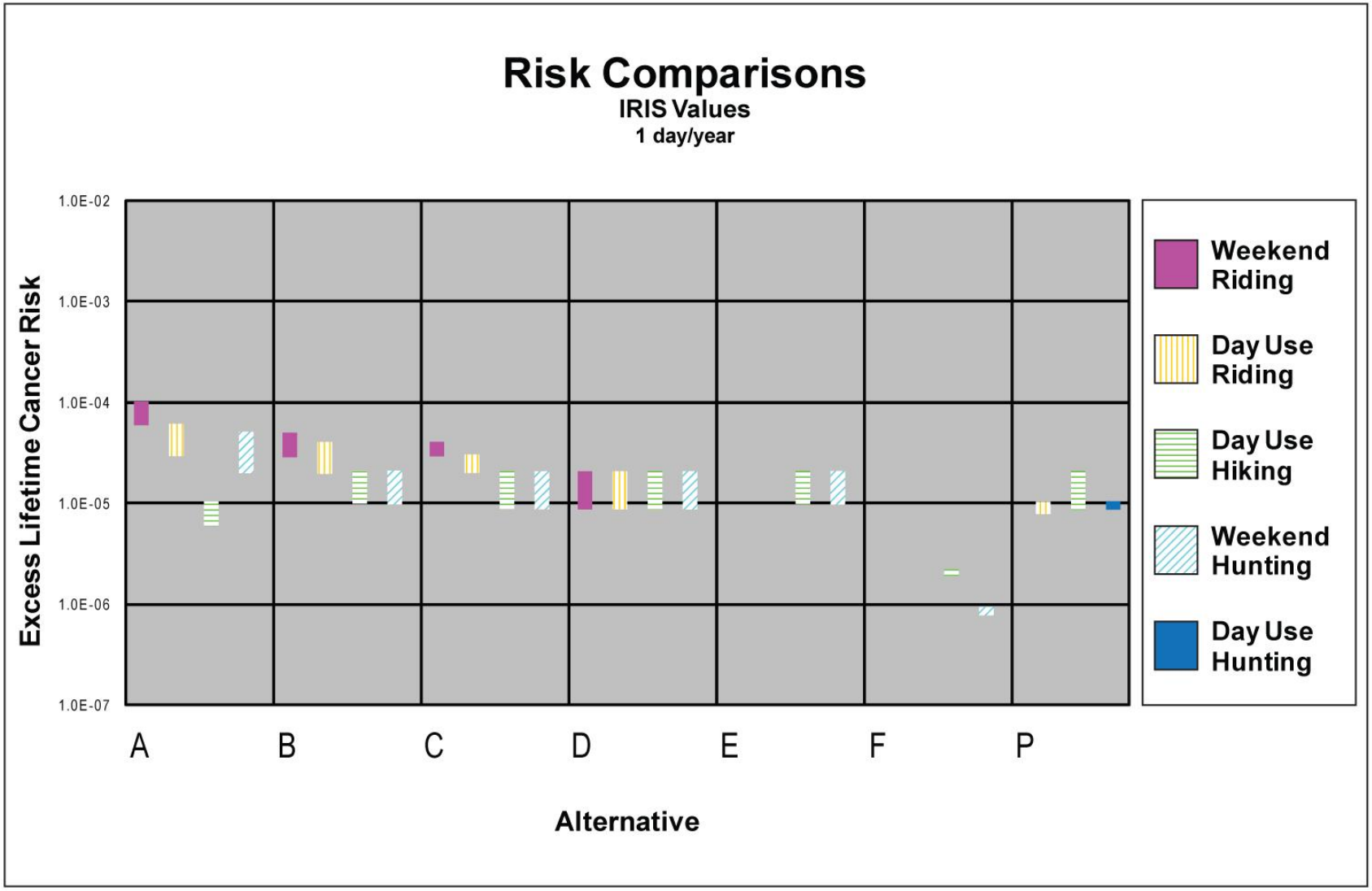


Table 4.2-5(e) 5-day IRIS Risk Summary of Management Alternatives (A – F) and the Proposed Action (P)

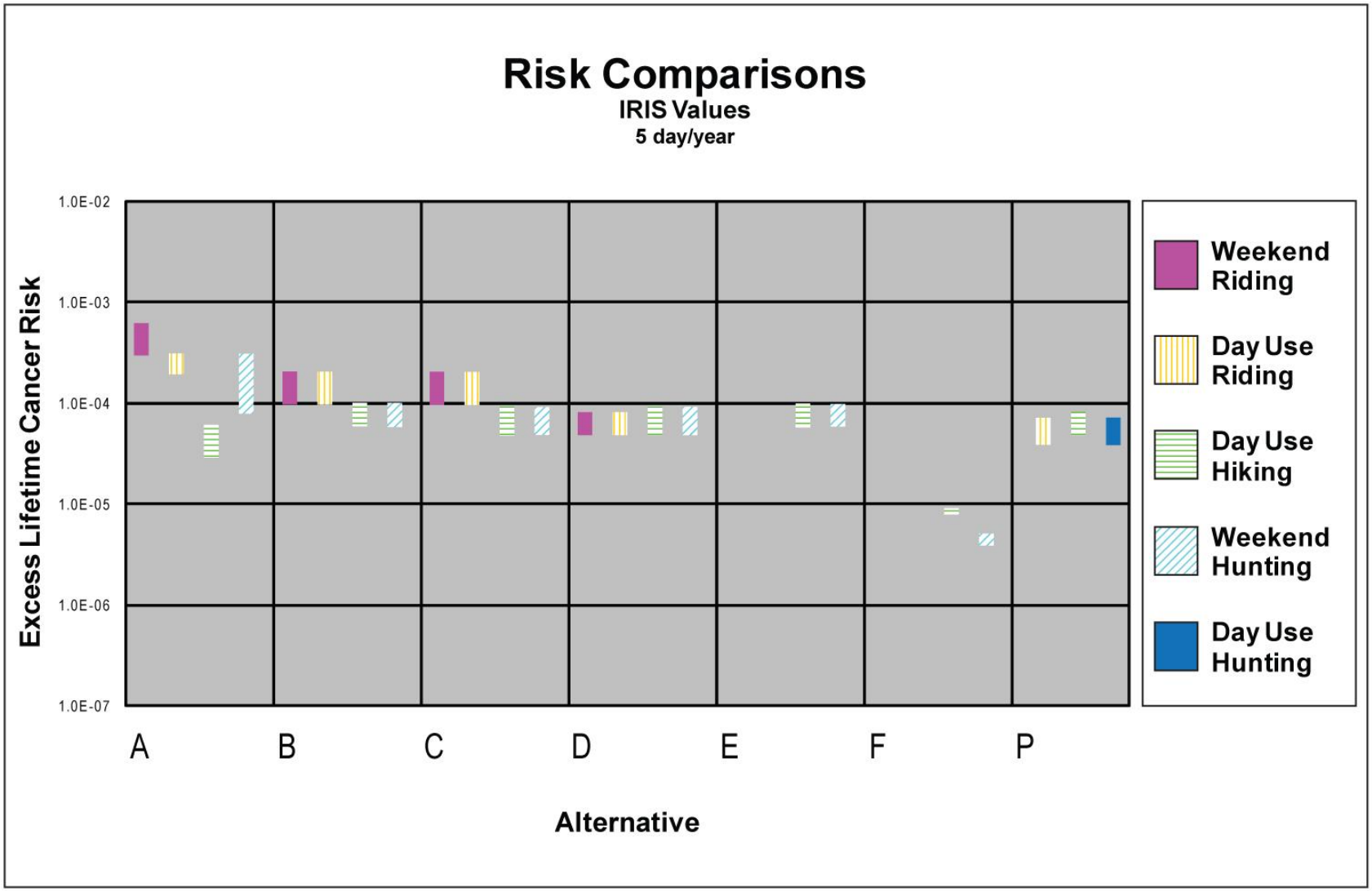


Table 4.2-5(f) 12-day IRIS Risk Summary of Management Alternatives (A – F) and the Proposed Action (P)

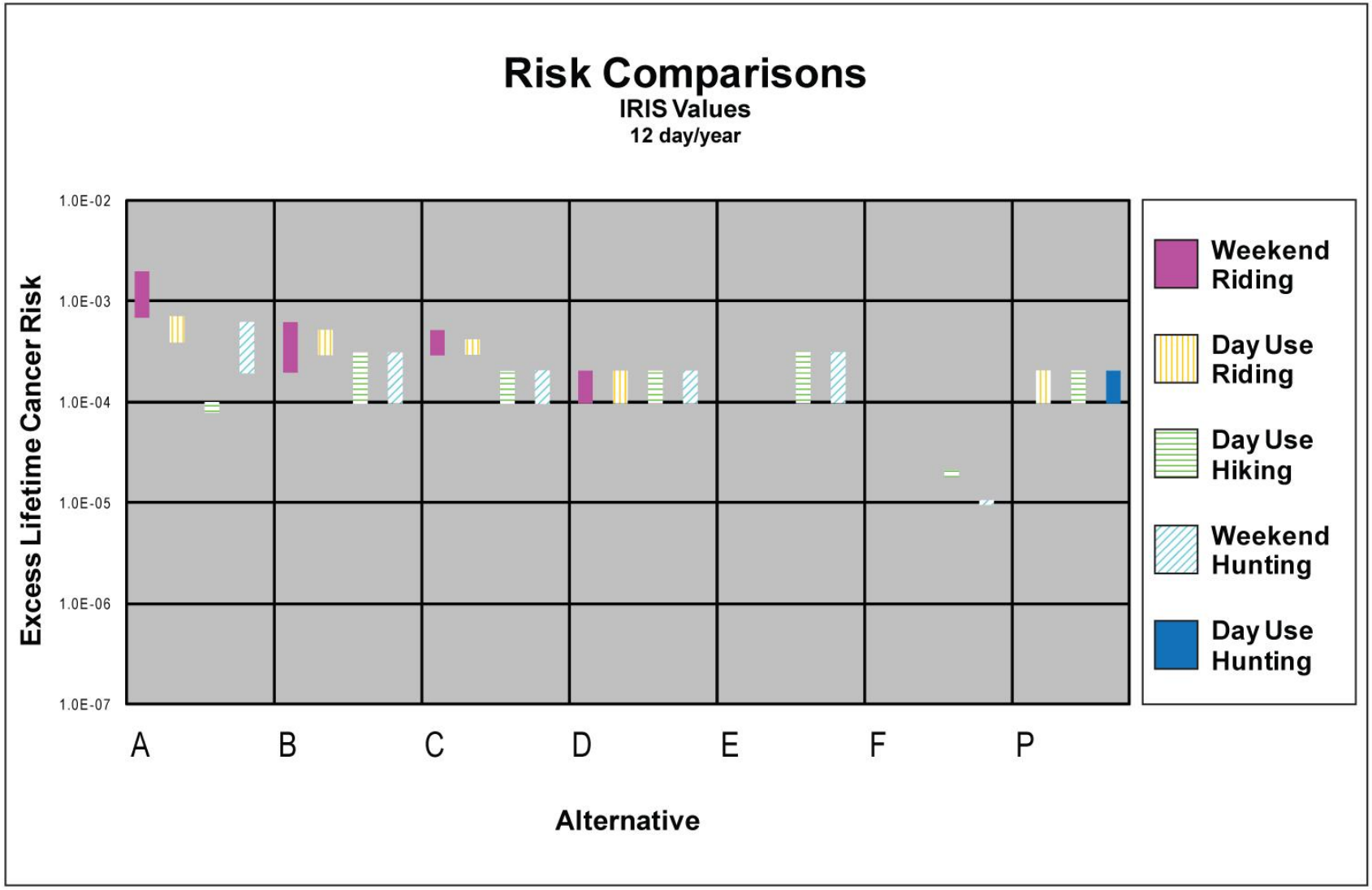


Table 4.2-6(a) Proposed Action - OEHHA Summary Table:

Day Use Rider

Combined Exposures, Adult Asbestos Cancer Risk:
Scenario 2 Day Use Rider (Motorcycle) (30-yr Exposure Duration)
Human Health Risk
Assessment
CCMA Asbestos Exposures (All Events)

Number of Visits/Year	Drive In (1 hour)	Drive In/Out (4 hours)	Sum of Combined Activities
Estimated Excess Lifetime Cancer Risk by Activity (Mean) Using OEHHA Unit Risk			
1		**7E-05**	**7E-05**
5 (RME)		**3E-04**	**3E-04**
12 (High Estimate)		**8E-04**	**8E-04**
Estimated Excess Lifetime Cancer Risk by Activity (95 UCL) Using OEHHA Unit Risk			
1		**1E-04**	**1E-04**
5 (RME)		**6E-04**	**6E-04**
12 (High Estimate)		**1E-03**	**1E-03**

Notes:
There is an automatic rounding function in Excel; therefore, some values in the summary table may be slightly different than values in the individual calculation tables.
RME = Reasonable Maximum Exposure
Bolded results = an excess lifetime cancer risk greater than 1E-06
Bolded results (Shaded) = an excess lifetime cancer risk greater than 1E-04

Table 4.2-6(b) Proposed Action - OEHHA Summary Table:

Day Use Hiker

Combined Exposures, Adult Asbestos Cancer Risk:
Scenario 3 Day Use Hiker (30-yr Exposure Duration)

Human Health Risk Assessment
CCMA Asbestos Exposures (All Events)

Number of Visits/Year	Drive In/Out (4 hours)	Hiking (4 hours)	Decon Vehicle Wash (0.5 hours)	Decon Vacuum (0.5 hours)	Sum of Combined Activities
Estimated Excess Lifetime Cancer Risk by Activity (Mean) Using OEHHA Unit Risk					
1	**7E-05**	**7E-06**			**8E-05**
5 (RME)	**3E-04**	**3E-05**			**4E-04**
12 (High Estimate)	**8E-04**	**8E-05**			**9E-04**
Estimated Excess Lifetime Cancer Risk by Activity (95 UCL) Using OEHHA Unit Risk					
1	**1E-04**	**8E-06**			**1E-04**
5 (RME)	**6E-04**	**4E-05**			**6E-04**
12 (High Estimate)	**1E-03**	**9E-05**			**1E-03**

Notes:
There is an automatic rounding function in Excel; therefore, some values in the summary table may be slightly different than values in the individual calculation tables.
RME = Reasonable Maximum Exposure
Bolded results = an excess lifetime cancer risk greater than 1E-06
Bolded results (Shaded) = an excess lifetime cancer risk greater than 1E-04

Table 4.2-6(c) Proposed Action - OEHHA Summary Table:

Day Use Hunting

Combined Exposures, Adult Asbestos Cancer Risk:
Scenario 4 Day-Use Hunter (30-yr Exposure Duration)
Human Health Risk Assessment
CCMA Asbestos Exposures (All Events)

Number of Visits/Year	Drive In/Out (4 hour)	Hiking (2 hours)	Decon Vacuum (0.5 hours)	Sum of Combined Activities
Estimated Excess Lifetime Cancer Risk by Activity (Mean) Using OEHHA Unit Risk				
1	7E-05	3E-06		7E-05
5 (RME)	3E-04	2E-05		4E-04
12 (High Estimate)	8E-04	4E-05		9E-04
Estimated Excess Lifetime Cancer Risk by Activity (95 UCL) Using OEHHA Unit Risk				
1	1E-04	4E-06		1E-04
5 (RME)	6E-04	2E-05		6E-04
12 (High Estimate)	1E-03	5E-05		1E-03

Notes:
There is an automatic rounding function in Excel; therefore, some values in the summary table may be slightly different than values in the individual calculation tables.
RME = Reasonable Maximum Exposure
Bolded results = an excess lifetime cancer risk greater than 1E-06
Bolded results (Shaded) = an excess lifetime cancer risk greater than 1E-04

Table 4.2-6(d) 1-day OEHHA Risk Summary of Management Alternatives (A – F) and the Proposed Action (P)

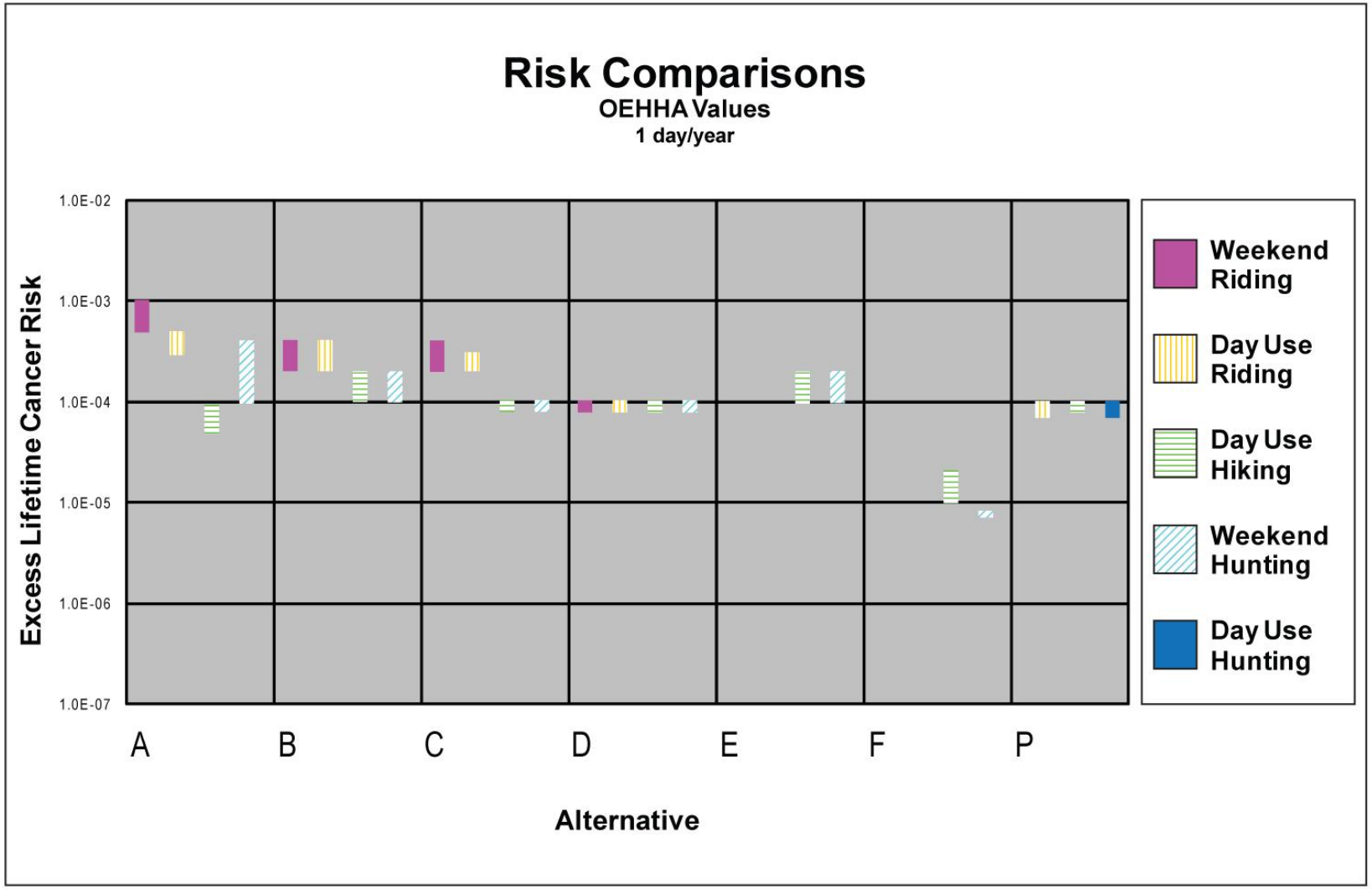


Table 4.2-6(e) 5-day OEHHA Risk Summary of Management Alternatives (A – F) and the Proposed Action (P)

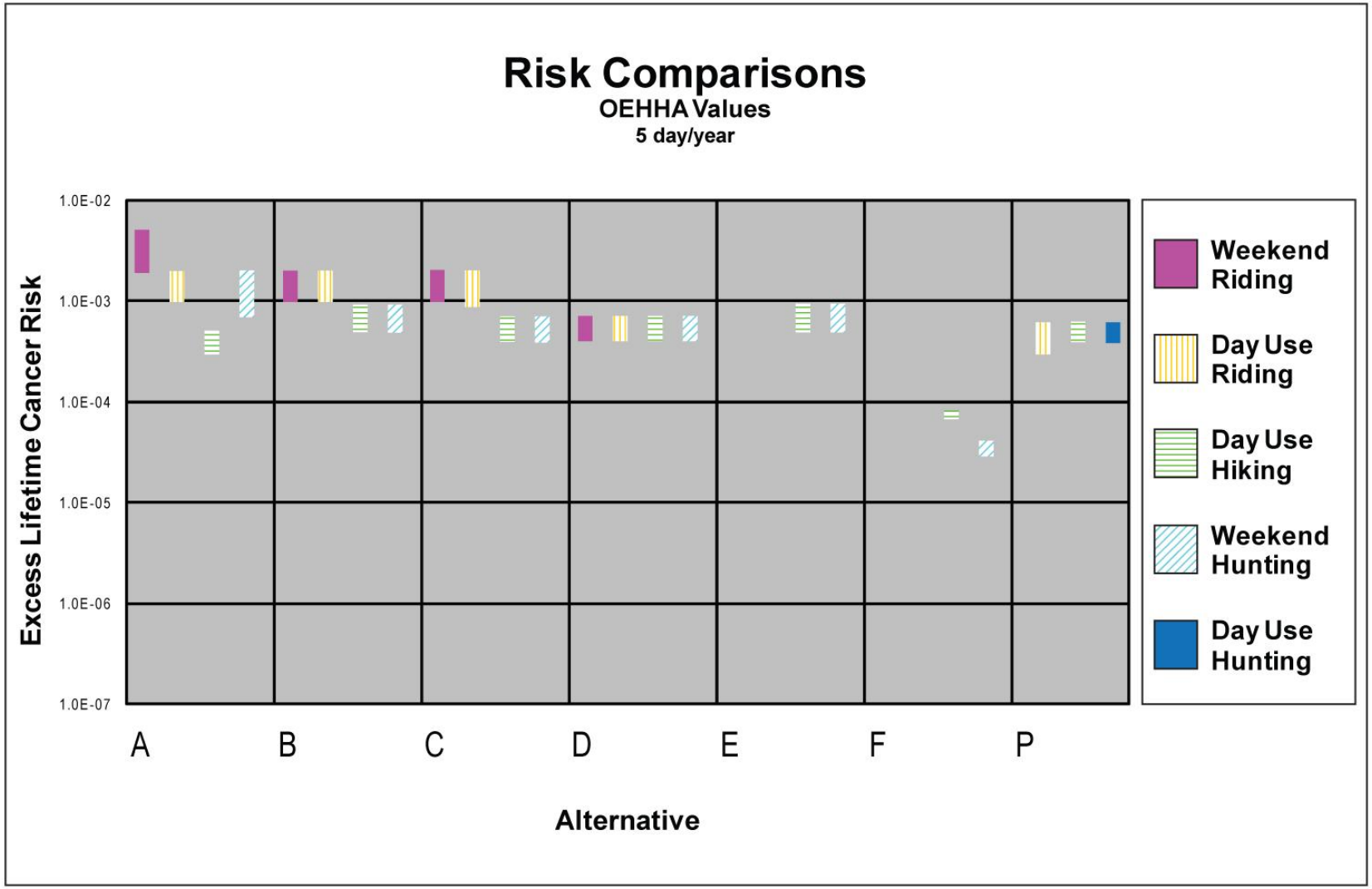
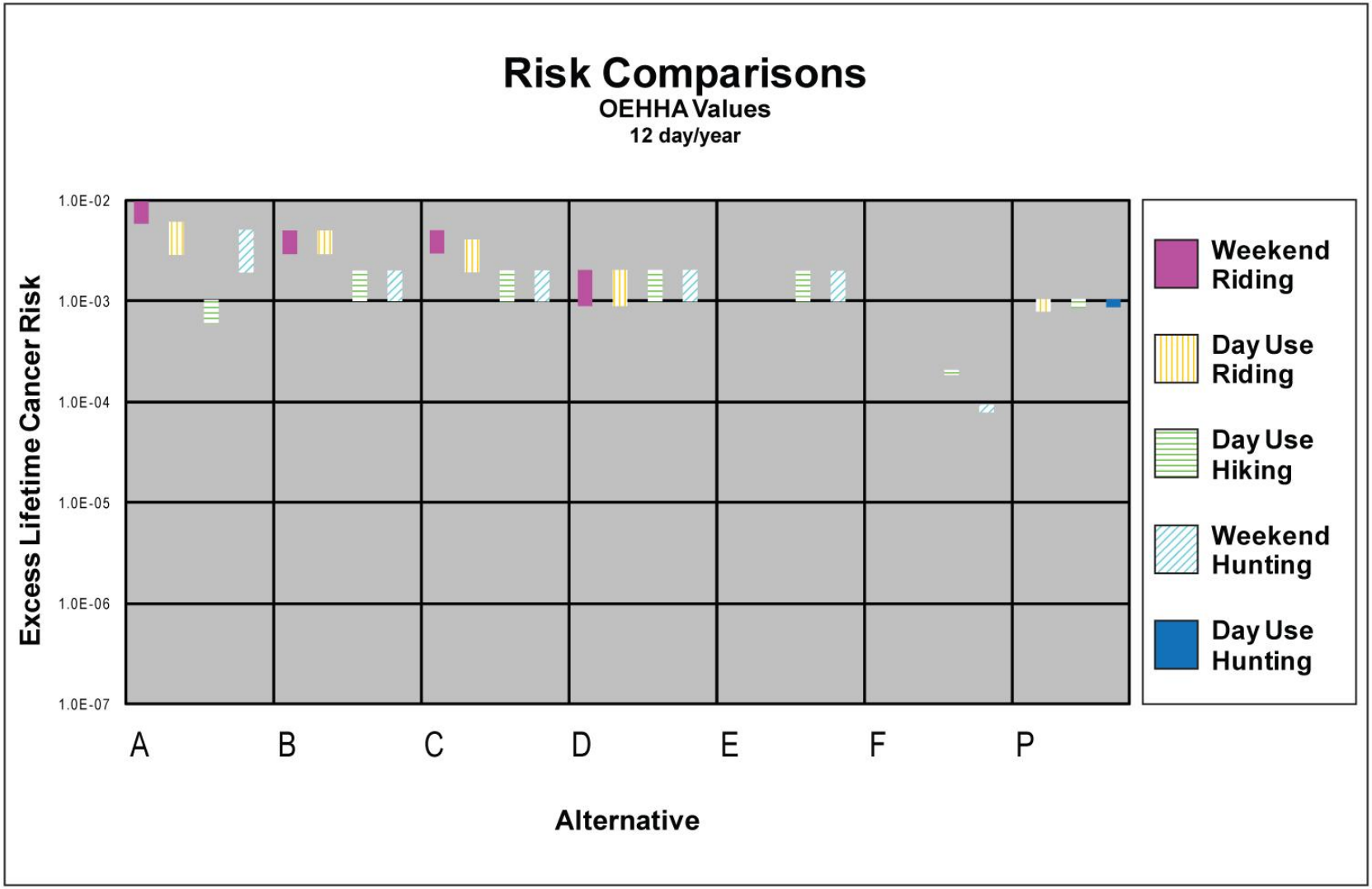


Table 4.2-6(f) 12-day OEHHA Risk Summary of Management Alternatives (A – F) and the Proposed Action (P)



4.2.5.1 Mitigation

Under the Proposed Action, mitigation measures to reduce risk to public health and safety include limiting vehicle types, restricting annual visitor use days, establishing speed limits, making improvement to major routes, dust suppression and hardening road surfaces, and taking other corrective action(s) to comply with Federal, State, and local regulations.

Limits on Vehicle Types

Motorized access in the Serpentine ACEC would be limited to highway-licensed vehicles on designated routes. Although there would be no reduction in risk from asbestos exposure to visitors in highway-licensed vehicles in the Serpentine ACEC, there would be some benefits to public safety from limiting vehicle types because there would be less potential for injuries and accidents associated with vehicle collisions with green- sticker and red-sticker off-highway vehicles.

Limited Annual Visitor Use Days/Year (Access by Permit Only)

Since cancer risk from asbestos is a function of exposure concentration, duration of exposure, and time from first exposure, assessments of human health risks are based on estimates of continuous lifetime exposure. Therefore, authorizations of access into the Serpentine ACEC by permit only to limit the number of visitor use days/year to 12 days for non-motorized recreation and 5 days for motorized activities would contribute long-term benefits on human health and safety because the total number of authorized visitor use days/year for any individual would be within the acceptable risk range for exposure to carcinogens.

Enforce Speed limits on Major Routes (10-20 mph)

In April 2005, the California Department of Toxic Substances Control completed a report titled, "Study of Airborne Asbestos from a Serpentine Road in Garden Valley, California". The objectives of the study were to measure asbestos concentrations on the road segment under traffic patterns that represent typical driving speeds and vehicle frequency. Therefore, DTSC collected air samples based on a 25 mile per hour (mph) speed limit, and a 10 mph speed limit to compare asbestos emissions on the road. The results of these air samples were calculated in a risk assessment, and as could be expected, the lowest estimated risk is associated with NOA concentrations at the farthest distance from the road, the fewest vehicles, the lowest speeds. Nevertheless, even under low speeds, asbestos emissions were still measureable and the human health risk from exposure to airborne asbestos fibers persists.

Based on the results of the DTSC study, establishing speed limits on major routes in CCMA would have some long-term beneficial impacts on vehicle traffic and visitor safety by reducing potential for accidents and head-on collisions. However, reliance upon speed limits to mitigate human health risks from exposure to asbestos would have negligible long-term benefits because of the persistence of airborne asbestos emissions from vehicular traffic and fugitive dust on roadways.

Dust Suppression on OHV Routes and Trails

Multiple products are available for dust suppression on trails. The impacts and effectiveness of these mitigation measures are analyzed in Section 4.3, Travel and Transportation Management. Overall, application of suppressant would likely have major adverse impacts on OHV recreation, but major long-term benefits for general vehicle use in the ACEC because these products provide a hardened, "capping" action that is only suitable for major routes and is not preferable to motorcycle or ATV users.

4.2.6 Overview of Impacts to HAZMAT from Other Management Activities

BLM is required by Federal, State, and local regulations to collect, store, and dispose of hazardous materials and wastes appropriately. Impacts would be beneficial for environmental resource protection and the safety of the public by implementing the recommendations from the past and future Compliance Assessment Safety, Health, and Environment (CASHE) audits, which may include correcting deficiencies in storage of hazardous materials, disposal practices for hazardous wastes, and other possible findings identified in the CASHE audits. Additional beneficial impacts of management actions are related to monitoring for illegal dumping of chemicals on Federal lands to identify and cleanup potential impacts to the environment and public safety before the hazard migrates off-site and correcting abandoned mining-related and other public land hazards.

4.2.6.1 Illegal Dumping

Illegal dumping of hazardous materials and wastes occurs area-wide and is a common concern throughout the Planning Area. Impacts are typically localized and could be short- to long-term, depending on the time of site discovery and the corrective action. Illegal dumping may occur at any time and any place, particularly along secluded roads and trails that are relatively accessible to motorized vehicles. Hazardous materials and wastes may take the form of 55-gallon drums and other, smaller containers, but also may include large automobile parts, household appliances, large- and small-scale illicit drug laboratories, and discarded household solid wastes. Because BLM-managed lands are typically remote and secluded, and available to the public; management actions to identify and maintain an inventory of hazardous materials sites and eliminate or mitigate them as soon as possible would have an added benefit to the environment and public safety.

4.2.6.2 Abandoned Mine Lands

Abandoned mines, particularly for mercury ores, are scattered throughout BLM public lands within the Planning Area. Abandoned mines may pose a threat to human health and the environment through the presence of abandoned hazardous materials, such as cyanide, which may be found in containers or in tailings piles; acid mine drainage; and containers of diesel fuel and gasoline for operating the mining equipment. Also, physical threats to public safety include open shafts and tunnels, deteriorated buildings, and mining equipment. Eroding tailings piles may pose a threat to the environment, particularly if they contain extraction chemicals (e.g., cyanide) or elevated levels of metals, or if they are eroding into a stream or creek. Because BLM-managed lands are typically remote and secluded, and available to the public; management actions to identify and maintain an inventory of abandoned mines, and eliminate or mitigate hazards associated with them as soon as possible, would be an overall benefit to the environment and public safety. Depending on the type of mining, adits, tunnels, and caves also create a beneficial impact to biological habitats for nocturnal species such as bats.

4.2.6.3 Energy and Mineral Development

Hard rock mining operations in the CCMA have resulted in mercury, chromium and asbestos contamination in state waters. Any development of mine operations has potential to result in additional contamination to waterways as well potential airborne asbestos emissions. Oil and gas development activities often require the use of or creation of hazardous materials, including drilling muds. Drilling muds may contain various contaminants such as mercury, cadmium, arsenic, and hydrocarbons, among others, and if not managed correctly can seep into surrounding surface and ground water and degrade the quality.

4.2.6.4 Livestock Grazing

Rangeland use can require the use or storage of hazardous materials such as fuel tanks and various paints, solvents or thinners. In the event of an accidental spill, the fuel can migrate to into surrounding surface and ground water and degrade the water quality.

4.2.6.5 Impacts to HAZMAT from Other Management Activities under Alternatives A

Under Alternatives A, impacts from oil and gas development will likely be limited to areas with high development potential (reference Map 10, Appendix I). Additionally, under all alternatives, oil and gas development is expected to be minimal over the next 10-15 years. Therefore, the impacts of hazardous materials use from oil and gas development are expected to be negligible.

The rangeland management actions for Alternative A would not increase the size of livestock grazing allotments; therefore any impacts on grazing improvements, such as added fuel tanks, would also be negligible.

Impacts from land tenure adjustments on hazardous materials emissions would be negligible because BLM cannot accept lands that are contaminated from hazardous materials and wastes. There would be no impact to existing right-holders either, as BLM would maintain land use authorizations for private landowners and rights-of-way holders.

Mitigation

Mitigation measures under Alternative A are included in the management actions in Chapter 2. BLM would eliminate or mitigate as soon as possible potential environmental and public safety impacts from exposure to airborne asbestos emissions, illegally dumped hazardous materials, and waste and from abandoned mine sites. Additionally, BLM would seek cost avoidance and/or cost recovery from the legally responsible parties to mitigate BLM funding impacts for cleanup costs of contaminated public lands.

4.2.6.6 Impacts to HAZMAT from Other Management Activities under Alternatives B - G

Alternatives B through G would benefit the overall public safety and the environment by maintaining an inventory of hazardous materials and by seeking cost avoidance and/or cost recovery from the legally responsible parties. Compared to Alternative A, the management actions to identify and maintain an inventory of hazardous materials sites and eliminate or mitigate them as soon as possible would be an overall benefit to the environment and public safety.

Impacts from land tenure adjustments on hazardous materials emissions would be negligible because BLM cannot accept lands that are contaminated from hazardous materials and wastes. There would be no impact to existing right-holders either, as BLM would maintain land use authorizations for private landowners and rights-of-way holders.

While the impacts from permitted activities like livestock grazing, communications sites, and energy and development would be similar under all alternatives, the potential and the location could be different. Alternatives B and C have the greatest flexibility as to the type and location of high-impact activities and, as such, provides the most potential for activities that could result in the release of hazardous materials. Permitted uses such as mining, telecommunications, or wind development would require compliance with all Federal, State, and local regulations. However, these activities could have more severe impacts on

BLM-managed lands if not mitigated, monitored, or implemented properly, especially in the Serpentine ACEC.

Alternatives D, E, and F would restrict authorization of new communications sites and other rights-of-ways in the Serpentine ACEC to existing facilities and stipulate human health and safety mitigation measures in land use authorizations. Under these alternatives, livestock grazing would be excluded from the Serpentine ACEC and BLM would recommend the 30,000-acre ACEC for withdrawal from locatable mineral entry under the mining laws. These actions would have moderate long-term beneficial effects on public health and safety because they would reduce potential emissions of asbestos associated with land use authorizations and BLM management activities in the Serpentine ACEC.

Alternative G would prohibit new rights-of-ways in the Serpentine ACEC. Under Alternative G, BLM would recommend all the BLM-administered lands in CCMA (66,500 acres) for withdrawal from locatable mineral entry under the mining laws and unavailable for livestock grazing. This alternative would have the most long-term beneficial impacts on human health and safety of all the alternatives considered in this PRMP/FEIS because it would minimize potential emissions of asbestos associated with land use authorizations and BLM management activities in the Serpentine ACEC.

Mitigation

Mitigation measures under Alternatives B – G are included in the management actions in Chapter 2. BLM would eliminate or mitigate as soon as possible potential environmental and public safety impacts from exposure to illegally dumped hazardous materials, and waste and from abandoned mine sites. Additionally, BLM would seek cost avoidance and/or cost recovery from the legally responsible parties to mitigate BLM funding impacts for cleanup costs of contaminated public lands.

4.2.5.6 Impacts to HAZMAT from Other Management Activities under the Proposed Action

Under the Proposed Action, impacts from oil and gas development will likely be limited to areas with high development potential (reference Map 10, Appendix I). Additionally, oil and gas development is expected to be minimal over the next 10-15 years. Therefore, the impacts of hazardous materials use from oil and gas development are expected to be negligible.

The rangeland management actions for the Proposed Action would not increase the size of livestock grazing allotments; therefore any impacts on grazing improvements, such as added fuel tanks, would also be negligible.

Impacts from land tenure adjustments on public safety would be negligible because BLM cannot accept lands that are contaminated from hazardous materials and wastes. There would be no impact to existing right-holders either, as BLM would maintain land use authorizations for private landowners and rights-of-way holders.

The Proposed Action would benefit the overall public safety and the environment by maintaining an inventory of hazardous materials and by seeking cost avoidance and/or cost recovery from the legally responsible parties. Management actions to identify and maintain an inventory of hazardous materials sites and eliminate or mitigate them as soon as possible would be an overall benefit to the environment and public safety.

The Proposed Action would restrict authorization of new communications sites in the Serpentine ACEC to existing facilities. Permitted uses such as mining, telecommunications, or wind development outside the ACEC would require compliance with all Federal, State, and local regulations. However, these activities could have more severe impacts on BLM-managed lands if not mitigated, monitored, or implemented properly, especially in the Serpentine ACEC.

Under the Proposed Action, BLM would propose that none of the public lands in the special designation areas would be available for leasing, sales, or hard rock mining. Although BLM would recommend withdrawal of public lands in the ACEC from mineral entry; only the United States Congress can formally withdraw public lands from mineral entry, which would result in major long-term benefits to public health and safety because it would reduce the potential for increased hazardous materials emissions form energy development proposals and the associated public health and safety concerns in a 30,000 acre area with high concentrations of asbestos fibers in the serpentine soils.

Under the Proposed Action, BLM would authorize current use levels and work with grazing operators to prevent possible contamination. Because there is no change to current use levels, the proposed livestock grazing decisions would have negligible effects on hazardous materials and public health and safety.

4.2.7 Cumulative Effects on HAZMAT and Public Health & Safety

Pneumoconioses are diseases caused by the inhalation and deposition of mineral dusts in the lungs, resulting in pulmonary fibrosis and other parenchymal changes. In a July 2004, the United States Center for Diseases Control and Prevention reported that temporal patterns of pneumoconiosis mortality during 1968—2000 indicate an overall decrease in pneumoconiosis mortality. The CDC report describes known pneumoconioses, which include “coal workers' pneumoconiosis (CWP), silicosis, asbestosis, mixed dust pneumoconiosis, graphitosis, and talcosis”, and explains that no effective treatments for these diseases are available. Despite the marked decrease in some pneumoconioses, the CDC study concludes that “asbestosis increased steadily” from 1968-2000, and is “now the most frequently recorded pneumoconiosis on death certificates” (CDC 2004). The CDC acknowledges that the findings in this report are subject to limitations.

The overall effect of these limitations are unclear, and “as with any data based solely on death certificate information, cause of death information is subject to potential errors associated with disease diagnosis, recording, and coding.” Furthermore, substantial increases in asbestos-related litigation through the 1990’s raised awareness of asbestosis, “likely leading to its more frequent diagnosis and recording on death certificates.” Despite these limitations, CDC asserts the data is useful as a “historical perspective on pneumoconiosis mortality”, and “can be used to assess the effectiveness of preventive measures”. The CDC study was based on a mortality surveillance system for respiratory diseases of occupational interest maintained by the National Institute for Occupational Safety and Health (NIOSH).

According to the report, “the data are drawn from annual National Center for Health Statistics (NCHS) multiple-cause-of-death mortality files, which include all deaths in the United States since 1968. For this report, pneumoconiosis deaths were identified during 1968--2000, the most recent year for which complete data are available, and include any death certificates for which an International Classification of Diseases (ICD) code* for CWP, silicosis, asbestosis, or unspecified/other pneumoconiosis was listed as either the underlying or contributing cause of death.” The CDC also provides on-line resources and information regarding public health and safety that describes asbestos exposure as the leading cause of malignant mesothelioma.

4.2.7.1 Cumulative Effects of the Management Alternatives A, B, C, and D

The presence of airborne asbestos dust, a known carcinogen, poses a potential human health risk in the serpentine portion of the CCMA. Studies have proven that the vast majority of airborne asbestos dust in the Clear Creek area is generated by human activities, primarily vehicle use. Continued OHV use on unpaved routes, trails, and barrens would generate asbestos emissions, and visitor use and exposure to asbestos in the ACEC would have long-term negative cumulative effect on individuals excess lifetime cancer risks (ELCR).

Alternatives A, B, C would have long-term adverse cumulative effects on public health and safety from airborne asbestos emissions because visitor use would be similar to current levels. Potential health risks and air quality impacts from airborne asbestos emissions associated with OHV recreation use would still include an elevated risk of contracting serious and/or life-threatening asbestos-related diseases from exposure to asbestos fibers. Any reductions in impacts to human health would come primarily from mitigation and administrative measures. Extending dry season vehicle restrictions would contribute to reduced impacts to human health.

Furthermore, airborne asbestos emissions and public exposure would be reduced by dust suppression with water trucks, on approximately 25 miles of major routes in CCMA. A public vehicle wash rack for removing dust, mud and other asbestos-containing materials from vehicles could substantially reduce the cumulative impacts on public health and safety from off-site transport of asbestos by OHV user vehicles and subsequent exposure.

Under these alternatives, surface disturbing activities would only be permitted during periods when air concentrations of asbestos fall below OSHA action levels for a given activity. All BLM road maintenance and grading activities would be conducted in compliance with MBUAPCD ATCM for airborne asbestos, to prevent visible emissions during these operations. Education programs related to asbestos exposure and hazards would be expanded, and any new risk assessments would be incorporated into informational materials. Closure of all remaining mine areas and restricting vehicle access to these areas would further reduce public exposure to hazardous contaminants and transport of hazardous metals to streams and corresponding off-site transport.

Nonetheless, exposure to concentrations of asbestos similar to those analyzed by EPA in the CCMA Asbestos Exposure and Human Health Risk Assessment would have a long-term negative cumulative impact on public health and safety due to the elevated risk of asbestos related diseases and cancer.

4.2.7.2 Cumulative Effects of the Management Alternatives E, F, and G

Under Alternatives E, F, and G, closure of routes and barrens to motorized access and OHV recreation would contribute to an overall reduction in asbestos dust generation and its transport by wind off-site, and would contribute to lower levels of asbestos transported by water and reduced impacts to beneficial uses.

Alternatives E, F, and G would have long-term beneficial cumulative impacts on public health and safety compared to other alternatives because visitor use would be much lower than current levels and additional mitigation measures would be implemented to further reduce human health risks. Nonetheless, potential health risks and air quality impacts from airborne asbestos emissions associated with motorized and non-motorized recreation use would still include an elevated risk of contracting serious and/or life-threatening asbestos-related diseases from exposure to asbestos fibers. Any reductions in impacts to human health would come primarily from mitigation and administrative measures.

4.2.7.3 Cumulative Effects of the Proposed Action

Under the Proposed Action, there would be long-term beneficial cumulative impacts on public health and safety compared to the Alternatives A - D because visitor use would be much lower than current levels and additional mitigation measures would be implemented to further reduce human health risks from exposure to airborne asbestos fibers and asbestos emissions from BLM's resource management activities on public lands in the CCMA. Nonetheless, potential health risks and air quality impacts from airborne asbestos emissions associated with motorized and non-motorized recreation use within the ACEC above the levels in Alternatives F and G would still result in an elevated risk of contracting serious and/or life-threatening asbestos-related diseases from exposure to asbestos fibers. Any reductions in impacts to human health would come primarily from mitigation and administrative measures.

4.3 Travel and Transportation Management

For ease of reference, the management goals from Chapter 2 are restated here:

- The goals for travel management are to (1) continue to maintain roads for resource management purposes; (2) continue to support local counties and the State of California in providing a network of roads for movement of people, goods, and services across public lands; (3) manage motorized access use to protect resource values, promote public safety, provide responsible motorized access use opportunities where appropriate and minimize conflicts among various user groups.

4.3.1 Introduction

Travel management is the process of planning for and managing access and transportation systems on the public lands. Travel management planning should address all resource values and uses and accompanying modes and conditions of travel on public lands, and impacts to resources associated with the travel network. These include travel and transportation access needs for all the BLM-administered programs and resource management activities, including activities and access associated with mineral and energy development, rights-of-way and utility corridors, livestock management, wildlife and vegetation management, fire, lands and realty, and recreation.

All routes in the Planning Area are assigned one of four travel management designations: (1) open to motorized or mechanized cross-country travel, (2) limited to designated routes, (3) closed to motorized and mechanized travel, or (4) closed to all public use.

In 1999, CCMA was designated a “Limited” OHV use area available for motorized recreation on designated routes and trails. In 2006, BLM approved the CCMA RMP Amendment for Route Designation, which identified “open” routes and trails on CCMA public lands. Therefore, the baseline for the analysis of impacts from BLM transportation management actions is limited to routes on public lands designated ‘open’ in the 2006 ROD.

4.3.2 Overview of Impacts

4.3.2.1 Impacts from Travel Management Actions

This subsection provides an overview of impacts on this resource. The background and overall impact assessment is provided here and, as needed, further analysis, such as the location or severity of the impact, is provided under each alternative.

Vehicle Use Area and Route Designations

All of the designated routes under each alternative were selected from routes previously designated as open in the 2006 CCMA RMP amendment. The BLM planning team developed extensive criteria for evaluating routes and areas in the 2006 route designation process. These designation criteria address a variety of management issues and concerns, including compliance with statutory guidelines. Designation decisions are be based on a variety of data, including previous studies, field inventory data, biological, environmental, cultural, natural and recreation resources, land use, and land ownership. This process is standardized, repeatable, and can be logically followed; it assesses each route and area, and documents that assessment; and establishes a clear link between the designation decision and the rational for that

decision. As a result, the routes designated open under each alternative in this PRMP/FEIS have been screened through the route designation criteria (Appendix II).
Vehicle use area designations (i.e., open, limited, or closed) under the range of alternatives are based on 248.5 miles of existing designated open routes, with designated routes (open, closed) and mileage varying by alternative.

Impacts from travel restrictions include changes in the amount and type of traffic, construction of new roads/trails, and abandonment of existing roads/trails. The development and construction of new routes and the abandonment and restoration of existing routes would also have minor negative, indirect impacts on private property owners and other existing rights-holders that would be required to obtain rights-of-ways to travel across BLM public lands on authorized on specific routes. Similarly, changes in the level and types of traffic on roads accessing CCMA could result in minor negative, indirect impacts on local and State governments that manage the road system if additional maintenance or patrol becomes necessary.

Appropriate capacity and modes of access is an important feature of travel management planning. Too little route capacity may result in overcrowding, and lack of roads or access could result in the inability of the public to enjoy certain areas of the CCMA public lands. Areas where there is no public access or where access could be improved include Condon Zone, Cantua Zone, Tucker Zone and Joaquin Ridge, directly south of the CCMA. Traditional access to Joaquin Ridge has been through the CCMA along Spanish Lake Road.

Redundant routes are routes that no longer serve their intended purpose that are excessive or unnecessary routes serving the same destination. Redundant routes can result in deterioration of visual or biological resources, or cause an additional maintenance load on the managing agency. Closure of these routes can result in beneficial impacts on water and biological resources and visual quality; however, the potential added burden on the remaining open routes may result in negative impacts such as soil erosion or compaction, loss of vegetative cover, or traffic congestion on the remaining route network.

Route Management

Some level of use restriction would be necessary to varying degrees under all alternatives. This may include temporary closure of roads due to the presence of unstable soils or rare or endangered plant species, or during severe weather conditions and seasonal closures. While some users may prefer to use the BLM's open routes year-round, these temporary closures could provide beneficial long-term impacts to the routes, natural surroundings, and public health and safety.

Indirect impacts, including the need for added sign maintenance or patrol in order to institute these restrictions, could be an added burden on BLM or local law enforcement agencies.

Dust Suppression on OHV Routes and Trails

Multiple products are available for dust suppression on trails. See Appendix V. Each of these products requires multiple applications per year, especially in areas sustaining high mechanical wear, such as OHV routes and trails. Rain and snow further shorten the application intervals due to run-off. There is no production-grade application device available for a single track trail situation, especially when dealing with the narrow, off-camber and steep grade trails endemic to CCMA. An application device would have to be fabricated for motorcycle or hand application and would likely be unfeasible from a cost/benefit perspective, especially when labor is considered.

Only a limited amount of dust suppressant (~3 gal=24lbs) would be able to be transported at a time due to weight limitations. This would greatly limit productivity with frequent refill trips. Trails would need to be closed during application and drying periods, and barrens would need constant application if continually disturbed by vehicle use.

Overall, application of suppressant would likely have major adverse impacts on OHV recreation, but major long-term benefits for general vehicle use in the ACEC because these products provide a hardened, "capping" action that is only suitable for major routes and is not preferable to motorcycle or ATV users.

Other trail hardening techniques, such as base-rock, would be extremely costly and difficult to apply. Weight would be an issue for transportation. The trails with a grade above 6-7% would not hold the gravel, with the majority of the material ending up down-watershed. Mechanical erosion would also further exacerbate this condition. Soil run-off and fugitive dust would need to be periodically capped with a reapplication as well.

Motorized Vehicle Use Conflicts

User conflicts can occur in areas where there is heavy non-motorized and motorized use within the same travel ways. While there are no management actions defined to address this issue, the change in recreational opportunities throughout the Planning Area, as provided under Alternatives B, C, D, E, F and G would lessen the potential for these conflicts, primarily due to decreased motorized recreation opportunities. Alternatives D, E, F and G offer the most restrictions to motorized recreation and it is these Alternatives which offer the greatest potential for lessening any conflicts with non-motorized user groups.

4.3.2.2 Impacts from Other Management Actions

Biological Resources

Biological resources management can aid in reducing soil erosion and reducing dust, and also can generally improve local ecological conditions, all of which can help stabilize roads and trails, thereby also reducing maintenance costs. There also may be secondary effects of improved user enjoyment. Conversely, in areas where water and biological restoration projects are conducted, roads may need to be temporarily or permanently closed in order for these projects to be successful. This may be burdensome on public lands users in areas of popular road use. Alternatives C, D, E, F and G offer the greatest opportunity to enhance water and biological resources. These Alternatives limit to varying degrees the amount of travel within the management area, with Alternative G eliminating all but specially permitted access, thus offering the greatest benefits to resources.

Recreation

The type, intensity, and location of recreation activity affect the need and use of routes in the Planning Area. Access is driven by recreation demands and management objectives. Each Alternative addresses a different type, intensity and location within the Management Area while taking into account human health and safety. These limitations on recreation will directly impact transportation routes and access within the Management Area.

Livestock Grazing

No new routes are foresee-ably needed in support of the HFO grazing program in the management area. The proposed new access at Condon Peak Zone from Los Gatos Creek Road would be implemented to primarily support recreation access, with grazing support a secondary benefit.

Energy and Minerals

Major energy and mineral exploration in the management area stopped in 1996 with the KCAC Asbestos Mine and would see no impacts under all alternatives.

4.3.3 Impacts to Travel Management for Alternative A

4.3.3.1 Impacts from Travel Management Actions

Vehicle Use Area and Route Designations

Alternative A, the "No Action" alternative, would maintain existing management policies and procedures. There would be no new routes constructed and/or existing routes abandoned. Vehicle use on BLM public lands in the planning area would be limited to designated routes and barrens. The BLM would continue to designate open up to 270 miles of motorized roads and trails where deemed appropriate through proper planning actions.

The public lands managed within CCMA would remain open to motorized vehicle use on existing routes, except where closed by closure notices, and/or by activity-level planning decisions. OHV regulations would still apply to route use by the general public. Under this alternative, plans addressing recreational activities for specific areas and access issues would be developed and implemented. These actions would provide major long-term benefits for travel management and a variety of motorized visitor uses in CCMA.

Route Management

Alternative A would continue those practices set forth in the 2006 Record of Decision for the CCMA RMP Amendment and Route Designation. These actions would provide major long-term benefits for travel management and a variety of motorized visitor uses in CCMA.

Motorized Vehicle Use Conflicts

Under this alternative, minor user conflicts would continue to be an issue in areas where there is non-motorized and motorized use within the same travel ways, as well as in areas with heavy pressure for multiple uses and resource value concerns. Minor conflicts would also continue between the three types of OHV user groups.

4.3.3.2 Impacts from Other Management Actions

Biological Resources

Alternative A would provide adequate environmental protection to biological resources, as all activities and improvements to roads and access would be required to comply with established road construction and route maintenance standards. Actions that may affect special status species would be subject to consultation with the US Fish and Wildlife Service, and BLM would incorporate conservation recommendations from the associated Biological Opinion(s), Many measures mitigating transportation

and access on designated routes and trails in CCMA have already been implemented and would only result in minor short-term impacts to resources in the Planning Area.

Recreation

The type, intensity, and location of recreational activities affect the need and use of roads in the Planning Area. Alternative A offers a variety of high and low-impact recreation. Many of the recreational opportunities that are allowed or promoted under Alternative A require some mode of vehicular access. Because this Alternative offers the largest amount of open or limited access routes in the management area, this would result in the most major long-term benefits to public transportation among the range of alternatives.

Livestock Grazing

Over time, rangeland use may introduce new roads into the Planning Area. These would likely be for administrative purposes only and would not have any substantial effect on transportation and access within the Planning Area.

Energy and Minerals

Energy and mineral development consists of hobby gem and mineral collection within the ACEC. Therefore, energy and mineral development is expected to have negligible impact on the transit network in the Planning Area.

4.3.3.3 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Mitigation includes closing routes, limiting access, or instituting use restrictions in specified areas as needed. Mitigation measures included under other resource programs will also lessen the impacts of roads and access on natural resources like water quality and vegetation.

4.3.4 Impacts to Travel Management Common to Alternatives B, C, D, E, F, & G

4.3.4.1 Impacts from Travel Management Actions

Vehicle Use Area and Route Designations

Under all the alternatives (except G[5]) the CCMA public lands vehicle use area designation would be "Limited", as described in Section 2.1.1 of this PRMP/FEIS, Routes designated open, under all alternatives, satisfy 43 CFR 8342.1 "minimization criteria", and the corresponding route designation criteria defined in Appendix II. Routes designated as closed do not contribute to achieving the Proposed RMP's resource objectives or fulfill the identified Planning Criteria to ensure overall protection of human health and the environment from hazardous airborne asbestos emissions.

The selection of routes is based on the route designation criteria identified in Appendix II, and the Limited vehicle use area designation to promote resources protection and minimize conflicts among existing and potential uses of the management area.

[5] Alt. G would designate the area "closed" to vehicle use to meet resource objectives & satisfy minimization criteria.

The designated routes under each alternative would only provide basic access to the public lands within select management zones, while providing transportation manageability, route continuity, and avoiding redundancy and route proliferation. It is acknowledged that some segments of the touring network could be substituted with alternate routes; however BLM determined that the designated routes provide suitable access to areas of interest with a broad range of recreation opportunities and would accommodate a variety of off highway vehicles.

All Alternatives allow for some type of a transportation network, with varying levels of access under each. Each alternative takes into account human health and safety, based on EPA calculated exposure levels, and attempts to meter traffic, access and duration of exposure based on the limits set forth in the CCMA Asbestos Exposure and Human Health Risk Assessment (2008).

All alternatives also consider new development of both motorized and non-motorized transportation and access within those Zones outside the ACEC.

Route Management

All alternatives include some level of restriction of public use of roads and trails during periods of inclement weather and would continue BMPs described in Appendix V.

In addition, the designated route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented below in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

Motorized Vehicle Use Conflicts

User conflicts can occur in areas where there is heavy non-motorized and motorized use within the same travel ways. With Alternative B, it is anticipated that motorized vehicle traffic on roads and trails remaining open may increase incrementally over time because the use season would be shortened from Alternative A. Alternative C would see increased congestion, especially on the single track, since the trail mileage for the same group of users would be reduced by nearly 100 miles. These actions could result in increased conflicts with non-motorized traffic due to increased user density. Conflicts also may increase as a result of road closures under Alternatives D, E, and F because the same amount of users would be forced to use fewer roads. Alternative G would see no conflicts, as users would not be present.

4.3.4.2 Impacts from Other Management Actions

Biological Resources

All Alternatives would provide adequate environmental protection for biological resources. All activities and improvements to roads and access would be required to comply with the Biological Opinion criteria. In the long run, most of these mitigating actions have been implemented and would result in no foreseeable impacts to maintaining adequate routes in the Planning Area.

Recreation

The type, intensity, and location of recreational activities affect the demand for roads in the Planning Area. Generally, Alternatives B, C, D and E promote some form of recreation supported by a route network within the ACEC. Additional areas outside of the ACEC with designated routes become increasingly important as mileage is restricted within the ACEC, especially for those areas traditionally accessed through the ACEC. Alternatives F and G restrict ACEC access to pedestrian or prohibit it altogether, respectively. Motorized access would be severely limited or eliminated under these alternatives, which would have major long-term adverse effects on motorized recreation in CCMA. Hobby gem and mineral collection would also be adversely impacted under Alternatives F and G because access within the ACEC under Alternative F would be limited to foot traffic, and no public access under Alternative G would eliminate rockhounding opportunities entirely.

Livestock Grazing

Over time, rangeland use may introduce new roads into the Planning Area. These would likely be for administrative purposes only and would not have any substantial effect on transportation and access within the Planning Area.

Energy and Minerals

Energy and mineral development consists of hobby gem and mineral collection within the ACEC. Therefore, energy and mineral development is expected to have negligible impact on the transit network in the Planning Area.

Lands and Realty

Under Alternatives B-G, there are potential adverse impacts to existing rights-holders and CCMA private land owners that use routes crossing public lands from requirements to obtain a formal right-of-way (ROW) pursuant to FLPMA and pay annual rental fees. The intensity of those adverse impacts varies based on the alternatives. Alternatives A through D would be considered minor because County roads would be used for primary access to private inholdings. Whereas, Alternatives E, F, and G would have moderate short-term adverse impacts because these alternatives would effectively close all County roads and require all landowners to get ROW from BLM for travel on routes in the ACEC. BLM may consider undue hardship on landowners and negotiate rental rates in accordance with BLM guidance. Often times this can mitigate the financial impact.

4.3.4.3 Mitigation

Mitigation measures are included in the management actions in Chapter 2 and Appendix V. Mitigation includes closing roads, limiting access, or instituting use restrictions in specified areas as needed.

Mitigation under other management actions will also lessen the impacts of roads and access on natural resources like water quality and vegetation. Alternative G would provide the most restrictions when it comes to roads and minimizing their impact on ecological resources. Alternatives E and F offer slightly less protection of these resources, Alternatives C and D offer a moderate amount of protection and Alternative B offers the least when compared to the No Action Alternative.

4.3.5 Impacts to Travel Management for Alternative B

4.3.5.1 Impacts from Travel Management Actions

Vehicle Use Area and Route Designations

Alternatives A and B provide the most amount of open or limited access routes in the Management Area. The route networks are identical and are only different by temporal/seasonal access restrictions. Alternative B would designate the CCMA a 'Limited' OHV use area and reaffirm the route and barren network designated under the 2006 CCMA ROD. Access points would be limited to the main entrance to Clear Creek Canyon from Coalinga Road and the county road through the former town of Idria. The Salinas Ramblers Motorcycle Club would also continue to have access via R7, which ends at their property boundary.

The Dry Season Use Restriction would extend from April 15th through December 1st, which would further reduce the visitor use season by 12 weeks and limit access to CCMA more than 60% of the year. Wet Season Use Restrictions would continue using established or improved methods as they become available. Under this alternative, visitors will be limited in their use by days/year based on the EPA and BLM risk assessment models and activity-based air sampling data gathered during the 'wet season', which is the time of year CCMA is open to the public.

Route Management

This alternative includes a level of restriction of public use of roads and trails during periods of inclement weather and would continue those BMPs set forth in the Appendix V.

In addition, the designated route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented above in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

Motorized Vehicle Use Conflicts

Same as Impacts and Mitigation Common to Alternatives B, C, D, E, F, and G (Sections 4.3.4.1 and 4.3.4.3).

4.3.5.2 Impacts from Other Management Actions

Same as Alternative A.

4.3.5.3 Mitigation

Alternative B includes mitigation that is as also specified for Alternative A. Mitigation includes closing roads, limiting access, or instituting use restrictions in specified areas as needed. Alternative B would also close or relocate travel routes that cross populations, critical habitat, or potential habitat of special status species, and would not allow vehicle use within riparian areas except at designated crossing.

4.3.6 Impacts to Travel Management for Alternative C

4.3.6.1 Impacts from Travel Management Actions

Vehicle Use Area and Route Designations

The BLM would implement Best Management Practices (BMPs) to reduce off-site water quality impacts for roads and trails that no longer serve their original purpose, or exceed State soil loss standards.

Alternative C designated routes would consist of the County roads and dry season route network with year-round access. County Roads would not be maintained, and BLM anticipates that certain sections of Clear Creek Road (R1) would become impassable over the life of this Plan. An additional 150 miles of single track trails would be designated for motorcycle use only. Testing would be necessary to determine those products most effective and durable for dust suppression. OHV use in the Serpentine ACEC would be limited to visitors over 18 years of age. Remote automated weather stations would be established to effectively monitor soil moisture conditions to determine the need for dry and/or wet weather closures.

These actions would result in a permanent net loss of open or limited access routes in the Planning Area. While there are many ecological benefits to this, this loss of opportunity is considered an adverse impact to the transportation network in the Planning Area as it may cause additional crowding of the remaining roads which can result in secondary effects of off-road driving and creation of unofficial, user-inspired routes that ultimately will need to be closed or maintained.

Route Management

This alternative includes a level of restriction of public use of roads and trails during periods of inclement weather and would continue those BMPs set forth in Appendix V.

In addition, the designated route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented above in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

Motorized Vehicle Use Conflicts

Same as Impacts and Mitigation Common to Alternatives B, C, D, E, F, and G (Sections 4.3.4.1 and 4.3.4.3).

Minor user conflicts may occur in areas where motorized access is allowed

4.3.6.2 Impacts from Other Management Actions

Same as Alternatives A and B.

4.3.6.3 Mitigation

Mitigation measures under Alternative C include closing roads, limiting access, or instituting use restrictions in specified areas as needed. Alternative C would implement BMPs to reduce off-site water quality impacts from roads and trails newly closed that no longer serve their original purpose, or exceed state soil loss standards; and mitigate or relocate travel routes that cross populations, critical habitat, or potential habitat of special status species.

4.3.7 Impacts to Travel Management for Alternative D

4.3.7.1 Impacts from Travel Management Actions

Vehicle Use Area and Route Designations

Alternative D would designate routes for full sized vehicles comprised of the County roads and major BLM roads for year-round access. Routes would be limited to full size vehicles within the ACEC. Cooperation would continue between the BLM and San Benito County to maintain County roads for public access through the ACEC to Joaquin Ridge. Remote automated weather stations would be established to effectively monitor soil moisture conditions to determine the need for dry and/or wet weather closures.

Motorized access to the Condon Zone would be through a newly developed recreation site and staging area off of Coalinga-Los Gatos Road. OHV opportunities would be provided within the Condon Zone. The Cantua and Tucker Zones would also be developed with new recreation sites, access roads and OHV routes on the public lands within these zones.

According to public comments from the Timekeepers Motorcycle Club, this alternative is not reasonable because it promotes developing trails where access is not reasonably foreseeable in the future. They assert that because the trail network couldn't be connected, the proposed trail network would be worthless.

BLM acknowledges that there is no public access to the Tucker Mountain area in Table 2.6-14. The PRMP/FEIS also explains that access would be obtained by working with private land owners to develop public easements or by acquiring properties to provide public access to the BLM-managed lands in these zones. The timeframe for this to occur would be based on participation from willing landowners and other details to determine if this is feasible or cost effective.

These actions would result in a permanent net loss of open or limited access routes in the Planning Area. While there are many ecological benefits to this, this loss of opportunity is considered an adverse impact to the transportation network in the Planning Area as it may cause additional crowding of the remaining roads which can result in indirect adverse impacts from off-road driving and creation of unofficial, user-inspired routes that ultimately will need to be closed or maintained.

It is important to note that new route development, especially in the Cantua and Condon Zones, would likely result in the discovery of asbestos bearing serpentine inclusions and would present further health and safety issues at any points of crossing. The San Benito River Zone is a fragmented area that presents many difficulties for a motorized route network because the majority of the public lands in this Zone are non-contiguous and broken by private property. Connecting this Zone to any other routes outside of the Serpentine ACEC within the neighboring Condon Zone would not be possible without crossing private lands. These considerations make this zone an unlikely candidate for any further routes.

Route Management

This alternative includes a level of restriction of public use of roads and trails during periods of inclement weather and would continue those BMPs set forth in Appendix V.

In addition, the designated route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented

above in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

Motorized Vehicle Use Conflicts

Minor user conflicts may occur in areas where motorized access is allowed between traditional motorized use and the new OHV user groups in the peripheral Management Zones.

4.3.7.2 Impacts from Other Management Actions

Same as Alternative A, B, and C for fire management, livestock grazing, and energy and minerals.

Recreation and Access

Under Alternative D, OHV recreation activities would be allowed on designated open routes in the Condon Zone, which could result in adverse impacts on riparian areas from streambed disruption or trampling of riparian vegetation, and not meeting the goal of maintaining or enhancing water quality. Motorized recreation access would be authorized on approximately 60 miles of route network following inventory resource screening, and route designation criteria outlined in Appendix II. Additional roads and parking for vehicles would be allowed near Coalinga-Los Gatos Road, San Carlos Bolsa, and Tucker and Wright Mountain(s), and increased development and/or expansion of recreation facilities such as campgrounds throughout the Planning Area would be pursued. Compared to other action alternatives, Alternative D would allow the most motorized recreation outside the ACEC and the most development of recreation facilities in the CCMA, which has the potential to create moderate adverse impacts to water resources through increased erosion from roads, trails, and recreation facility developments, introduction of contaminants to water bodies during development of new facilities, and increased potential for riparian habitat destruction through the development of new roads and increased visitor numbers in these areas. This alternative would have a negative impact on BLM's goal of maintaining or enhancing water quality in CCMA watersheds.

Under Alternative D, closure or restoration of roads would only occur in the Serpentine ACEC on designated closed routes with stream crossings, or other areas with high potential for sedimentation of waterways. These actions have the potential to create moderate to major beneficial impacts to water resources through decreased soil erosion, vehicle-related contaminant introduction to water bodies, and enhanced watershed functions. Like Alternative C, this alternative does not specifically prohibit vehicles from major routes and stream crossings in the ACEC, which would result in more adverse impacts to water resources than Alternatives E, F, and G.

4.3.7.3 Mitigation

Reference 4.3.4.1 and 4.3.4.3 and/or Appendix V.

Mitigation includes closing roads, limiting access, or instituting use restrictions in specified areas as needed. Alternative D would implement BMPs to reduce off-site water quality impacts from roads and trails newly closed that no longer serve their original purpose, or exceed state soil loss standards; and mitigate or relocate travel routes that cross populations, critical habitat, or potential habitat of special status species.

4.3.8 Impacts to Travel Management for Alternative E

4.3.8.1 Impacts from Travel Management Actions

Vehicle Use Area and Route Designations

Alternative E would restrict public access to T153 and Spanish Lake Road (Route R-11) year-round within the ACEC. All public rights-of-way would be vacated on County roads within the ACEC. The County roads from Clear Creek entrance to Jade Mill would be maintained, as would the County road from Idria to its connection with T153. Access would be restricted during extreme weather conditions based on soil moisture monitoring and/or established procedures for seasonal use restrictions. Gates would be installed at all entrance points to control public access. Motorized access throughout the rest of the ACEC would be authorized for existing rights-holders, private property in-holders, scientific studies, research and education from accredited institutions and individuals and on a case-by-case basis. The Condon and Tucker Zones would be maintained for non-motorized activities. The Cantua Zone would be analyzed for construction of a motorized route network. If implemented, this route would provide primary hunting and hiking access, and new recreation facilities would be constructed to support non-motorized recreation opportunities. Existing RMOs would be maintained within the Condon Zone.

These actions would result in a permanent net loss of open or limited access routes in the Planning Area. While there are many ecological benefits to this, this loss of opportunity is considered an adverse impact to the transportation network in the Planning Area as it may cause additional crowding of the remaining roads which can result in secondary effects of off-road driving and creation of unofficial, user-inspired routes that ultimately will need to be closed or maintained.

Route Management

This alternative includes a level of restriction of public use of roads and trails during periods of inclement weather and would continue those BMPs set forth in Appendix V.

In addition, the designated route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented above in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

Motorized Vehicle Use Conflicts

Minor user conflicts may occur in areas where motorized access is allowed between traditional motorized use and the new OHV user groups in the peripheral Management Zones.

4.3.8.2 Impacts from Other Management Actions

Same as Alternative A, B, and C for fire management, livestock grazing, and energy and minerals.

4.3.8.3 Mitigation

Reference 4.3.4.1 and 4.3.4.3 and/or Appendix V.

Mitigation includes closing roads, limiting access, or instituting use restrictions in specified areas as needed. Alternative E would implement BMPs to reduce off-site water quality impacts from roads and trails newly closed that no longer serve their original purpose, or exceed state soil loss standards; and mitigate or relocate travel routes that cross populations, critical habitat, or potential habitat of special status species.

4.3.9 Impacts to Travel Management for Alternative F

4.3.9.1 Impacts from Travel Management Actions

Vehicle Use Area and Route Designations

Alternative F would restrict public access in the ACEC to pedestrian traffic and/or written motorized access authorizations. All existing rights-of-way would be maintained, and gates would be constructed at entrance points to control vehicle access into the ACEC. Clear Creek Road would be decommissioned and restored to provide habitat and control erosion. Non-motorized recreation opportunities would be allowed for the general public within the ACEC, but permits would limit access to less than 12 visitor days. Written authorizations would also be required for scientific research and education groups to access the Serpentine ACEC, SBMRNA, and Joaquin Rocks. Access would be restricted during extreme weather conditions based on soil moisture monitoring and/or established procedures for seasonal use restrictions. New transportation facilities would be considered in the Cantua and Tucker Zones to support non-motorized recreation opportunities. Existing RMOs would be maintained within the Condon Zone, with a new staging area and motorized access established along Coalinga-Los Gatos Road.

This alternative would result in a permanent net loss of open or limited access routes in the Planning Area. While there are many ecological benefits to this, this loss of opportunity is considered an adverse impact to the transportation network in the Planning Area as it may cause additional crowding of the remaining roads which can result in secondary effects of off-road driving and creation of unofficial, user-inspired routes that ultimately will need to be closed or maintained.

Route Management

This alternative includes a complete restriction on motorized use of roads and trails in the Serpentine ACEC. BLM would continue to implement the BMPs set forth in Appendix V for routes in the ACEC that would continue to be used for administrative purposes and authorized access for landowners and existing rights-of-way holders.

In addition, the administrative route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented above in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

Motorized Vehicle Use Conflicts

Minor user conflicts may occur in areas where motorized access is allowed between traditional motorized use and the new OHV user groups in the peripheral Management Zones.

4.3.9.2 Impacts from Other Management Actions

Same as Alternative A, B, and C for fire management, livestock grazing, and energy and minerals.

4.3.9.3 Mitigation

Reference 4.3.4.1 and 4.3.4.3 and/or Appendix V.

Mitigation includes closing roads, limiting access, or instituting use restrictions in specified areas as needed. Alternative F would implement BMPs to reduce off-site water quality impacts from roads and trails newly closed that no longer serve their original purpose, or exceed state soil loss standards; and mitigate or relocate travel routes that cross populations, critical habitat, or potential habitat of special status species.

4.3.10 Impacts to Travel Management for Alternative G

4.3.10.1 Impacts from Travel Management Actions

Vehicle Use Area and Route Designations

Alternative G would prohibit all public access inside the ACEC. All public rights-of-way would be terminated on County Roads and gates would be constructed at entrance points to control vehicle access into the ACEC. Access would be authorized into the ACEC for existing rights-holders, private property in-holders, scientific studies, research and education from accredited institutions and individuals and on a case-by-case basis. Access authorizations would stipulate health and safety requirements and, where deemed appropriate, would require compliance with the Hollister Field Office Health and Safety Plan for the ACEC. Cantua and Tucker Mtn. zones would be managed for non-motorized recreation and Condon Peak zone would be limited to full-sized vehicles and ATVs on designated routes with a new staging area established along Los Gatos Creek Road.

This alternative would result in a permanent net loss of open or limited access routes in the Planning Area. While there are many ecological benefits to this, this loss of opportunity is considered an adverse impact to the transportation network in the Planning Area as it may cause additional crowding of the remaining roads which can result in secondary effects of off-road driving and creation of unofficial, user-inspired routes that ultimately will need to be closed or maintained.

Route Management

This alternative includes a complete restriction on motorized use of roads and trails in the Serpentine ACEC. BLM would continue to implement the BMPs set forth in Appendix V for routes in the ACEC that would continue to be used for administrative purposes and authorized access for landowners and existing rights-of-way holders.

In addition, the administrative route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented above in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

Motorized Vehicle Use Conflicts

All public access within the ACEC is prohibited, therefore no conflicts are predicted. Minor user conflicts may occur in areas where motorized access is allowed within the Condon Zone.

4.3.10.2 Impacts from Other Management Actions

Same as Alternative A, B, and C for fire management, livestock grazing, and energy and minerals.

4.3.10.3 Mitigation

Mitigation includes closing roads, limiting access, or instituting use restrictions in specified areas as needed. Alternative G would implement BMPs to reduce off-site water quality impacts from roads and trails newly closed that no longer serve their original purpose, or exceed state soil loss standards; and mitigate or relocate travel routes that cross populations, critical habitat, or potential habitat of special status species.

4.3.11 Impacts to Travel Management for the Proposed Action

4.3.11.1 Impacts from Travel Management Actions

Vehicle Use Area and Route Designations

The Proposed Action would designate a *Scenic Touring Route* for highway-licensed vehicles comprised of the roads identified in Appendix I on the Proposed Action Map, for year-round access. Vehicle use on the designated routes would be limited to highway-licensed vehicles within the ACEC. Access would be restricted during extreme weather conditions based on soil moisture monitoring and/or established procedures for seasonal use restrictions. Gates would be installed at all entrance points to control public access. Vehicle use on other administrative routes in CCMA that are designated closed would be for existing rights-holders, private property in-holders, scientific studies, and for research and education proposals from accredited institutions and individuals.

These actions would result in a major long-term reduction of transportation routes in the CCMA. The impacts to the transportation network in the Planning Area would be minor because the designated route network would maintain access for highway-licensed vehicles on all the existing major roads that provide public access to BLM-administered land in CCMA. However, the Proposed Action would have moderate adverse impacts on transportation in the Serpentine ACEC due to the loss of 191 miles of designated routes that were previously available for motorized use.

The selection of routes was not solely based on the BLM developed route designation criteria (Appendix II), but was based on the Limited Use area designation, restricting use to a scenic touring route to promote safety (public health) and minimize conflicts among the various uses of the management area. To ensure overall protection of human health and the environment from hazardous airborne asbestos emissions, the following criteria were used to develop the Scenic Touring Route network from among other routes that satisfy 43 CFR 8342.1 “minimization criteria” and the designation criteria identified in Appendix II.

- Transportation Manageability – routes suited to a range of highway-licensed vehicles that have adequate width/clearance, route maintenance objectives, gradient, and suitability for all season use. These routes also must provide continuity, and avoid redundancy and route proliferation.

- Recreation Opportunity – routes that provide access to key areas of interest that have historically provided a broad range of non-motorized recreation opportunities, including Clear Creek Canyon, the San Benito Mountain Research Natural Area, Wright Mountain/Joaquin Rocks, and the upper San Benito River.

The selected route network will provide access to areas of interest, including Clear Creek Canyon, the San Benito Mountain Research Natural Area, Wright Mountain/Joaquin Rocks, Goat Mountain, and the upper San Benito River. The selected routes provide the only practical access to the aforementioned areas, while providing transportation manageability, route continuity, and avoid redundancy and route proliferation. It is acknowledged that some segments of the touring network could be substituted with alternate routes, however it was determined that the selected scenic touring route best provides access to areas of interest with a broad range of recreation opportunities, accommodating a range of highway-licensed vehicles. Segments of the touring route network were primarily selected from the "R" routes which have a higher maintenance objective, are generally wider with less gradient, and best suited to a range of vehicle types. In certain areas routes were selected from the "T" routes to improve connectivity and minimize impacts to sensitive resources. All routes comprising the scenic touring route were selected from routes previously designated as open in the 2006 CCMA RMP amendment.

Criteria used to identify an inventory of routes suitable for the scenic touring route, under the Limited Use area designation, and the screening process is explained below.

- The Limited area restrictions will also include type of vehicle (highway licensed), and access by permit only (limiting annual visitor use days within the Serpentine ACEC.)

These restrictions are based on evaluation of a reasonable range of alternatives and the associated impacts as described in the CCMA Draft RMP/EIS; whereas BLM has selected a combination of management actions and objectives from among the range of alternatives for the Proposed RMP, with an emphasis on public health and safety measures to minimize asbestos exposure, reduce airborne asbestos emissions, and reduce human health risks associated with exposure to asbestos in CCMA. It is acknowledged that the Serpentine ACEC portion of the CCMA will no longer be considered an "OHV Recreation Area."

The overall vision of this scenic touring route designation is to provide the public access to key areas that have historically provided various non-motorized recreation opportunities, while minimizing impacts to public health from exposure to airborne asbestos by limiting the size (mileage) of the route network. This will meet the goals of providing a wide range of recreation opportunities and experiences; managing recreation use to minimize user impacts to the environment and public health; emphasizing the use of public outreach to increase public awareness of health issues related to exposure to airborne asbestos and sensitivity to resources; and to adaptively manage changing visitor use patterns.

- Outside the Serpentine ACEC, the Limited Use area designation shall be defined as restricting motorized use to designated routes, utilizing the designation methodology described in Appendix A, to satisfy minimization criteria outlined in 43 CFR 8342.1

The Condon and Tucker Zones would be maintained for non-motorized activities. The Cantua Zone would be analyzed for construction of a motorized route network to provide access for non-motorized activities and hunting. If implemented, this route would provide primary hunting and hiking access, and new recreation facilities would be constructed to support non-motorized recreation opportunities. Motorized access to the Condon Zone would be through a newly developed recreation site and staging area off of Coalinga-Los Gatos Road. Existing RMO's would be maintained within the Condon Zone allowing motorized use on the designated route network for full-size 4-wheel vehicles and ATV/UTVs. A

one-way route to Goat Mountain would be improved and designated for use by highway-licensed vehicles to provide access hang-gliding, a scenic overlook, and other non-motorized activities.

Motorized access and recreation facilities outside the ACEC would be improved for a moderate long term benefit for non-motorized activities in particular.

The San Benito River Zone is currently a fragmented area that presents many difficulties for a motorized route network because the majority of the public lands in this Zone are non-contiguous and broken by private property. Connecting this Zone to other routes outside of the Serpentine ACEC within the neighboring Condon Zone would be difficult. These considerations make this zone an unlikely candidate for any further routes without acquisition of additional lands.

Route Management

The Proposed Action includes a level of restriction of public use of roads and trails during periods of inclement weather and would continue those BMPs set forth in Appendix V. Travel Management Plans would be completed for the Condon, Tucker, and Cantua Zones. Access into the ACEC would be by permit only, and limited to 5 days for motorized use and 12 days for non-motorized use.

Over time, the designated route network would be improved where determined to be feasible to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

In general, implementation of BMPs, limiting access within the ACEC, and proving for future recreation opportunities outside the ACEC will provide moderate long term benefits for protection of watershed resources, public health, and dispersed recreation.

The following Route Maintenance Objectives were selected as the first screening criteria for the level of road best suited to provide access to a broad range of highway-licensed vehicles. The selection was chosen from the database of designated open routes from the 2006 RMP amendment.

1. Improved/Maintained Roads [Width > or = to 14 ft., Vertical Clearance > or = to 14 ft.]

Discussion: FIMMS level 4 road- this level is assigned to roads where management objectives require the road to be open all year (except may be closed or have limited access due to snow conditions) and to connect major administrative features (recreation sites, local road systems, administrative sites, etc.) to County, State, or Federal roads. Typically, these roads are single or double lane, aggregate, or bituminous surface, with higher volume of commercial and recreational traffic than administrative traffic.

The entire roadway is maintained at least annually, although a preventive maintenance program may be established. Problems are repaired as discovered. These routes will be maintained for access year-round for all vehicles. Route designation will be open to all vehicles unless designated for administrative use only. - General access to the CCMA

2. 4WD Recommended [Width > or = to 10 ft. Vertical Clearance > or = to 14 ft.]

Discussion: FIMMS level 3 road- this level is assigned to roads where management objectives require the road to be opened seasonally or year-round for commercial, recreation, or high volume administrative access. Typically, these roads are natural or aggregate surfaced, but may include low use bituminous surfaced roads. These roads have defined crossings section with drainage structures (e.g., rolling dips, culverts, or ditches). User comfort and convenience are not considered a high priority.

Drainage structures are to be inspected at least annually and maintained as needed. Grading is conducted to provide a reasonable level of riding comfort at prudent speeds for the road conditions. Brushing is conducted as needed to improve sight distance. Slides adversely affecting drainage will receive high priority for removal; otherwise they will be removed on a scheduled basis. Route designation will be open to all vehicles unless designated for administrative use only.

Motorized Vehicle Use Conflicts

User conflicts may occur in areas where motorized access is allowed for new user groups in the Cantua and Condon management zones. For example, noise, dust, and vehicle accidents can occur in areas where there is heavy non-motorized and motorized use within the same areas. Under the Proposed Action, these conflicts may increase because the same amount of users would be forced to use fewer roads as a result of major reductions in the designated route network and increased user density on the designate routes.

BLM used the best available data for decisions on process and evaluation of resource conditions and impacts, implementation of monitoring, enforcement, route restoration and route maintenance. Assessments of route condition and soil loss support decisions used in route designations. Information gathered in the future may lead to a re-evaluation of, and possible change in, route and area designation.

An additional subset of routes would be available for “administrative use” by permittees, licensees, rights-of-way holders, and the Federal government and authorized representatives. These routes would not be available for casual recreation use. These routes differ from closed routes, in that they would be regularly maintained and would not be considered for restoration. A majority of closed routes would be identified and prioritized for restoration over a period of years. Restoration refers to reclaiming of closed routes to revert to a natural state over time and disappear into the landscape. Route restoration would be evaluated through a separate environmental analysis. All of these actions would have moderate long-term beneficial effects on public lands resources because they would reduce motorized vehicle use conflicts with other resources uses and values.

4.3.11.2 Impacts from Other Management Actions under the Proposed Action

Recreation

The type, intensity, and location of recreational activities affect the demand for roads in the Planning Area. The Proposed Action promotes a variety of recreation activities supported by a route network within the ACEC. Additional areas outside of the ACEC with designated routes would become increasingly important as mileage is restricted within the ACEC, especially for those areas traditionally accessed through the ACEC. Hobby gem and mineral collection would experience negligible adverse impacts, as the *Scenic Touring* Route would continue to provide access to most collection areas.

Under the Proposed Action, motorized recreation activities would be allowed on designated open routes in the Condon Zone, which could result in adverse impacts on riparian areas from streambed disruption or trampling of riparian vegetation, and not meeting the goal of maintaining or enhancing water quality. Motorized recreation access would be authorized on approximately 30 miles of route network outside the

ACEC, following inventory resource screening, and route designation criteria outlined in Appendix II. Additional roads and parking for vehicles would be allowed near Coalinga-Los Gatos Road, San Carlos Bolsa, and Tucker and Wright Mountain(s), and increased development and/or expansion of recreation facilities such as campgrounds throughout the Planning Area would be pursued. Providing motorized access to areas outside the ACEC and the development of recreation facilities would have the potential to create moderate adverse impacts to water resources through increased erosion from roads, trails, and recreation facility developments, introduction of contaminants to water bodies during development of new facilities, and increased potential for riparian habitat destruction through the development of new roads and increased visitor numbers in these areas.

Biological Resources

The Proposed Action would provide adequate environmental protection to biological resources, as public access and all route management activities would incorporate BMPs outlined in Appendix V. Actions that may affect special status species would be subject to consultation with the US Fish and Wildlife Service, and BLM would incorporate conservation recommendations from the associated Biological Opinion(s). Many measures mitigating the effects of transportation on designated routes in CCMA have already been implemented, so the Proposed Action would only result in minor short-term impacts from recurring route maintenance projects.

Soil Loss and Erosion

The origin of the unimproved network of roads and trails in the CCMA is a direct result of the extensive mineral exploration and mine development for over a century (est. 1850-1980). Almost all of these roads and trails were not designed or maintained for erosion control. Due to increasing concerns for watershed resources in the mid-1980's, BLM began conducting an intensive inventory and analysis of the CCMA road system to analyze its contribution to the erosion of soils and the transportation of sediment into surface water bodies.

Since 1996, BLM has been recording annual sedimentation along Clear Creek by contracting with the U.S. Geological Survey (USGS). Based upon BLM's watershed studies and the USGS stream gauging measurements the sediment contribution associated with the CCMA road system can be accurately estimated.

The 1998 PWA report estimated that of 100 miles of road & trails evaluated, stream crossings accounted for about 8,500 cubic yards of increased sediment, road segments accounted for about 2,250 cubic yards of increased sediment, individual problem sites (needing spot treatments) accounted for about 2,500 cubic yards of increased sediment. PWA's report also identified that natural background erosion such as landslides, cut bank and stream bank erosion accounted for about 5,000 cubic yards. PWA's report concluded that about 40% of all erosion within this watershed was associated with improperly constructed and maintained roads.

The USGS monitored Clear Creek stream gauging station is located adjacent to the Oak Flat campground. In 2008, the USGS reported the annual sediment transported from Clear Creek into the San Benito River was 9,633 cubic yards. In 2006, the values for this USGS stream gauging site was much lower, only 870 cubic yards were documented. Over the last 15 years of USGS recorded sediment data, the combined sediment yield is approximately 71,000 cubic yards.

However, less than half of the estimated 71,000 cubic yards of sediment are due to a lack of proper road design and recurrent maintenance. About 28,400 cubic yards of asbestos and mercury contaminated

sediment that was transported downstream in the Hernandez Reservoir could be attributed to poor road & trail design and lack of proper maintenance.

Under the Proposed Action, reclamation or restoration of closed roads in the Serpentine ACEC on routes with stream crossings, or other areas with high potential for sedimentation of waterways would have the potential to create moderate to major long-term beneficial impacts to water resources through decreased soil erosion, vehicle-related contaminant introduction to water bodies, and enhanced watershed functions.

Livestock Grazing

The proposed routes in the Condon Zone from Los Gatos Creek Road would be implemented primarily support public access for non-motorized recreation opportunities. However, developing these proposed routes would also provide indirect benefits to livestock operators by improving access to grazing allotments.

Energy and Minerals

Major energy and mineral exploration in the management area stopped in 1996 with the closure of the KCAC Asbestos Mine and therefore there would be no impacts to travel management under the Proposed Action. Energy and mineral development currently consists of hobby gem and mineral collection within the ACEC. Therefore, energy and mineral development is expected to have negligible impact on the transportation network in the Planning Area.

4.3.11.3 Mitigation

Reference Appendix V.

Mitigation includes closing roads, limiting access, or instituting use restrictions in specified areas as needed. The Proposed Action would implement BMPs to reduce off-site water quality impacts from roads and trails newly closed that no longer serve their original purpose, or exceed soil loss standards; and mitigate or relocate travel routes that cross populations, critical habitat, or potential habitat of special status species.

4.3.12 Cumulative Effects

Federal agencies' management of travel management (i.e. motorized public access) and OHV use on federal lands is guided by policies and procedures to control and direct the use of OHV on federal lands in a manner that protects the resources of those lands, promotes the safety of all users, and minimizes conflicts among land uses. These policies and procedures also direct each federal land management agency to develop and issue regulations that designate specific areas and trails on public lands as open or closed with respect to OHV use.

Specifically, Executive Order No. 11644 (Feb. 8, 1972) (as amended by Exec. Order No. 11989, (May 24, 1977) provides the authority for federal land managers to close areas or trails if OHVs are causing considerable adverse effects. The Forest Service and BLM initially implemented these executive orders by designating areas as open, which allows cross-country OHV use; limited, which allows OHV use on a specific route authorized by an agency; or closed, which prohibits OHV use. More recently, these agencies have begun to reevaluate the procedures they use to make OHV designations because of the significant increase in popularity of OHV use through the 1990's.

As reported in the Government Accountability Office's June 2009 Report to the Subcommittee on National Parks, Forests, and Public Lands titled *Enhanced Planning Could Assist Agencies in Managing Increase Use of Off-Highway Vehicles*, "the environmental impacts of OHV use, both direct and indirect, have been studied and documented over the past several decades. In fact, in 2004, the Forest Service Chief identified unmanaged motorized recreation as one of the top four threats to national forests, estimating that there were more than 14,000 miles of user-created trails, which can lead to longlasting damage. Potential environmental impacts associated with OHV use include damage to soil, vegetation, riparian areas or wetlands, water quality, and air quality, as well as noise, wildlife habitat fragmentation, and the spread of invasive species. For example, studies on the impacts of OHV use indicate that soil damage can increase erosion and runoff, as well as decrease the soil's ability to support vegetation. Additionally, research has shown that habitat fragmentation from OHV use alters the distribution of wildlife species across the landscape and affects many behaviors such as feeding, courtship, breeding, and migration; habitat fragmentation can also negatively affect wildlife beyond the actual amount of surface area disturbed by roads. In 2007, the U.S. Geological Survey reported that as a result of OHV use, the size and abundance of native plants may be reduced, which in turn may permit invasive or nonnative plants to spread and dominate the plant community, thus diminishing overall biodiversity. Another potential impact of OHV use is damage to cultural resources, including archaeologically significant sites such as Native American grave sites, historic battlefields, fossilized remains, and ruins of ancient civilizations."

As a result the Forest Service issued a travel management regulation in 2005 to standardize the designation process to identify roads, trails, and areas that will be open to motorized travel. They developed a schedule to complete the route designations and to develop the required motor vehicle use maps by the end of calendar 2009. As of March 2009, the Forest Service had completed travel management planning for 53 million acres, or about 28 percent of its lands.

Like the Forest Service, BLM has also begun to reevaluate the procedures it uses to make OHV designations. Over the past 10 years, BLM has issued increasingly detailed guidance on how its field offices should address travel management in their resource management plans. In accordance with the executive orders, BLM regulations require that all its lands be given an area designation of either open, limited, or closed with respect to motorized travel and that these designations be based on protecting resources, promoting the safety of users, and minimizing conflicts between users. As of March 2009, BLM had designated about 32 percent of its lands as open to motorized travel, 48 percent as limited, and 4 percent as closed; 16 percent are not yet designated. BLM officials have estimated that in about 10 years they will complete updating resource management plans to include travel planning.

While updating a resource management plan, BLM field offices are to inventory and evaluate OHV routes and area designations (such as open, limited, and closed), seek public input, and make changes as appropriate. When the Hollister Field Office finalized its Record of Decision for the CCMA RMP Amendment and Route Designation in 2006, the plan changed the policy from "OHV use limited to <u>existing</u> routes" to "OHV use limited to <u>designated</u> routes". The management actions approved by BLM in the Record of Decision (2006) also reduced the miles of routes and trails open for OHV use from over 440 miles to 270 miles, and the acres of barrens open for OHV use from over 2,800 acres to 478 acres.

It is unlikely that the County, State, or local OHV areas within the Planning Area would grow significantly because they are already operating under regulatory limitations and budget constraints at existing use levels. As use of these areas increases, these impacts could become more problematic. These effects are addressed in more detail under Section 4.1 "Recreation."

4.3.12.1 Cumulative Effects of the Management Alternatives A, B, C, and D

Alternative A would have major long-term cumulative benefits for public and administrative access to BLM-administered lands in the Planning Area because it would continue to allow all forms of motorized and non-motorized recreation activities on designated routes and barrens in CCMA. Even though Alternatives B, C, and D would also authorize OHV recreation and motorized access for hunting and rockhounding on public lands, these alternatives would only have minor long-term cumulative benefits because of increasing restrictions on visitor use and vehicle types, or reductions in the miles of designated routes and barrens in the CCMA.

4.3.12.2 Cumulative Effects of the Management Alternatives E, F, and G

Alternatives E, F, and G would have long-term negative cumulative impacts on the regional transportation network, motorized access to BLM-administered lands, and OHV recreation opportunities at existing vehicle recreation areas within a 2-4 hour drive of the Planning Area. This is because any alternative resulting increased restrictions to motorized use in CCMA would likely result in increased use of other OHV recreation areas managed by Private, County, State and other Federal agencies.

4.3.12.3 Cumulative Effects of the Proposed Action

Even though the Proposed Action would limit motorized access for recreation opportunities on public lands, it would only have minor long-term negative cumulative effects on transportation and access because the 32 miles of designated routes would provide a public route system that connects the CCMA public lands with the network of Federal, State, and County roads in the region.

4.4 Biological Resources – Vegetation

For ease of use, the management goals from Chapter 2.4 are reiterated here:

- The goals for vegetation resources are to (1) restore, maintain, or improve ecological conditions, natural diversity, and associated watersheds of high value, high-risk, native plant communities and unique plant assemblages and (2) restore degraded landscapes and plant communities.

4.4.1 Introduction

Within the CCMA, many vegetation types are correlated with soil type. Likewise impacts to vegetation are closely related to impacts to soils. The Area of Critical Environmental Concern (ACEC) consists of the serpentine soil group and the San Benito River, Condon Peak/White Creek, Cantua, and Tucker Mountain Zones consist of the nonserpentine soil group. Vegetation types may be grouped into upland or riparian. Riparian vegetation is generally more sensitive to impacts than upland vegetation.

For the purpose of analysis: Vegetation types are grouped and analyzed as "serpentine riparian," "serpentine upland," "nonserpentine riparian," and "nonserpentine upland." Analysis of impacts to vegetation resources is focused upon the location and intensity of the activity with respect to the general soil type, serpentine or nonserpentine, which supports the corresponding vegetation type, riparian or upland.

Decisions relating to vegetation management will be within the context of the Standards and Guidelines for Rangeland Health in Central California (hereinafter referred to as the Standards and Guidelines). Vegetation structure and composition are key components of rangeland health. The management goals are achieved by 1) maintaining or improving current ecological values and processes, productivity, and biological diversity, 2) rehabilitating areas affected by wildland fire and other surface-disturbing activities to stabilize soils and promote growth of desired plant communities, and 3) preventing the introduction and proliferation of noxious weeds. Table 4.4-1 through Table 4.4-12 provides an overview of the management actions that would affect vegetation and how disturbance as dictated by the Proposed Action would impact vegetation.

Table 4.4-1 Summary of vegetation resource management actions for: Vegetation disturbance by non-motorized recreation.

Alternative	**Impact:** Vegetation disturbance by non-motorized recreation	**Management action:** Maintain vegetation integrity and diversity
A	Continued non-motorized recreation within both riparian and upland serpentine plant communities. Limited non-motorized recreation within both riparian and upland nonserpentine plant communities.	Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Maintain sustained yield of vegetation for consumptive and non- consumptive uses. Protect sensitive riparian and riparian vegetation.
B	Reduced non-motorized recreation within both riparian and upland serpentine plant communities. Limited non-motorized recreation within both riparian and upland nonserpentine plant communities.	Same as Alternative A, plus: Mitigate or relocate proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.
C	Same as Alternative B.	Same as Alternative B.
D	Further reduced non-motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine plant communities. Increased non-motorized recreation within both riparian and upland nonserpentine plant communities.	Same as Alternative B.
E	Further reduced non-motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine plant communities. The magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities.	Same as Alternative B.
F	Same as Alternative E.	Same as Alternative B.
G	No non-motorized recreation within riparian and upland serpentine plant communities. Non-motorized recreation impacts upon nonserpentine plant communities similar to Alt. D.	Same as Alternative B.
Proposed Action	Substantially reduced non-motorized recreation within both riparian and upland serpentine plant communities. The magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities.	Same as Alternative A, plus: Mitigate or relocate proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.

Table 4.4-2 Vegetation disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Vegetation disturbance by non-motorized recreation.

Vegetation by soil type	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↓	↓	↓↓	↓↓↓	↓↓↓	↓↓↓
Serpentine upland	↔	↓	↓	↓↓	↓↓	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↑↑↑	↑	↑	↑
Nonserpentine upland	↔	↔	↔	↑↑↑	↑	↑	↑
Predicted vegetation loss →	A >	B ~	C ~	D >	E >	F ~	G

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (detrimental), ↑↑↑ = major increase (detrimental). Predicted vegetation loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as B is approximately equal to C.

Table 4.4-3 Summary of vegetation resource management actions for: Vegetation disturbance by motorized recreation.

Alternative	**Impact:** Vegetation disturbance by motorized recreation	**Management action:** Maintain vegetation integrity and diversity
A	Continued intensive motorized recreation within both riparian and upland serpentine plant communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities.	Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Maintain sustained yield of vegetation for consumptive and non- consumptive uses. Protect sensitive riparian and upland vegetation.
B	Reduced motorized recreation within both riparian and upland serpentine plant communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities.	Same as Alternative A, plus: Mitigate or relocate proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.
C	Same as Alternative B.	Same as Alternative B.
D	Further reduced motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine plant communities. Greatly increased motorized recreation within both riparian and upland nonserpentine plant communities.	Same as Alternative B.

Alternative	**Impact:** Vegetation disturbance by motorized recreation	**Management action:** Maintain vegetation integrity and diversity
E	Further reduced motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine plant communities. Magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities.	Same as Alternative B.
F	No motorized recreation within riparian and upland serpentine plant communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities.	Same as Alternative B.
G	No motorized recreation within riparian and upland serpentine plant communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities.	Same as Alternative B.
Proposed Action	Substantially reduced motorized recreation within both riparian and upland serpentine plant communities. Magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities.	Same as Alternative A, plus: Mitigate or relocate proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.

Table 4.4-4 Vegetation disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Vegetation disturbance by motorized recreation.

Vegetation by soil type	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↓	↓	↓↓	↓↓↓	↓↓↓	↓↓↓
Serpentine upland	↔	↓	↓	↓↓	↓↓	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↑↑↑	↑	↑	↑
Nonserpentine upland	↔	↔	↔	↑↑↑	↑	↑	↑
Predicted vegetation loss →	A >	B ~	C ~	D >	E >	F ~	G

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (detrimental), ↑↑↑ = major increase (detrimental). Predicted vegetation loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as B is approximately equal to C.

Table 4.4-5 Summary of vegetation resource management actions for: Vegetation disturbance by energy and mineral exploration.

Alternative	**Impact:** Vegetation disturbance by energy and mineral exploration	**Management action:** Maintain vegetation integrity and diversity
A	Continued energy and mineral exploration within both riparian and upland plant communities of serpentine and nonserpentine areas.	Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Maintain sustained yield of vegetation for consumptive and non- consumptive uses. Protect sensitive riparian and upland vegetation.
B	Same as Alternative A.	Same as Alternative A, plus: Mitigate or relocate proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.
C	Same as Alternative A.	Same as Alternative B.
D	Same as Alternative A.	Same as Alternative B.
E	Energy and mineral exploration limited to both riparian and upland plant communities of nonserpentine areas outside of the ACEC.	Same as Alternative B.
F	Same as Alternative E.	Same as Alternative B.
G	Same as Alternative E.	Same as Alternative B.
Proposed Action	Energy and mineral exploration limited to both riparian and upland plant communities of nonserpentine areas outside of the ACEC.	Same as Alternative A, plus: Mitigate or relocate proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.

Table 4.4-6 Vegetation disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Vegetation disturbance by energy and mineral exploration.

Vegetation by soil type	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↔	↔	↔	↓↓↓	↓↓↓	↓↓↓
Serpentine upland	↔	↔	↔	↔	↓↓↓	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↔	↔	↔	↔
Nonserpentine upland	↔	↔	↔	↔	↔	↔	↔
Predicted vegetation loss →	A ~	B ~	C ~	D >	E ~	F ~	G

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D>E~F~G. "A~B" reads as A is approximately equal to B. "D> E" reads as: D is greater than E, or E is less than D.

Table 4.4-7 Summary of vegetation resource management actions for: Noxious weed invasion.

Alternative	**Impact:** Noxious weed invasion	**Management action:** Maintain vegetation integrity and diversity
A	Continued movement of weed seed on vehicles from both riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. Continued movement of weed seed on livestock from both riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities.	No management actions specified.
B	Reduced movement of weed seed on vehicles from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities.	Prevent and control noxious weed invasion. Develop an integrated pest management plan. Prioritize noxious weed eradication based on the BLM and California State list.
C	Same as Alternative B.	Same as Alternative B.

Alternative	**Impact:** Noxious weed invasion	**Management action:** Maintain vegetation integrity and diversity
D	Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. Greatly increased movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities.	Same as Alternative B.
E	Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. Limited movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities.	Same as Alternative B.
F	No movement of weed seed on vehicles from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. Limited movement of weed seed on vehicles within riparian and upland nonserpentine plant communities. Weed seed movement on livestock limited to only within riparian and upland nonserpentine plant communities outside of the ACEC.	Same as Alternative B.
G	No movement of weed seed on vehicles from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. Limited movement of weed seed on vehicles within riparian and upland nonserpentine plant communities. No weed seed movement on livestock within the CCMA.	Same as Alternative B.
Proposed Action	Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. Limited movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities.	Prevent and control noxious weed invasion. Develop an integrated pest management plan. Prioritize noxious weed eradication based on the BLM and California State list.

Table 4.4-8 Vegetation disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Noxious weed invasion.

Vegetation by soil type	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↓	↓	↓↓	↓↓↓	↓↓↓	↓↓↓
Serpentine upland	↔	↓	↓	↓↓	↓↓	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↑↑↑	↑	↑	↑
Nonserpentine upland	↔	↔	↔	↑↑↑	↑	↑	↑
Predicted vegetation loss →	A >	B ~	C ~	D >	E >	F ~	G

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (detrimental), ↑↑↑ = major increase (detrimental). Predicted vegetation loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as B is approximately equal to C.

Table 4.4-9 Summary of vegetation resource management actions for: Livestock grazing.

Alternative	**Impact:** Livestock grazing	**Management action:** Maintain vegetation integrity and diversity
A	Continued grazing within riparian and upland serpentine plant communities and riparian and upland nonserpentine plant communities.	Provide a mosaic of vegetative communities and adequate plant cover to protect soil, watershed, and wildlife. Rangeland health monitoring is required.
B	Same as Alternative A	Same as Alternative A, plus: Allow nonnative, naturalized plant species to be used in revegetation materials consistent with rangeland health standards.
C	Same as Alternative A.	Same as Alternative B.
D	Same as Alternative A	Same as Alternative B.
E	Same as Alternative A	Same as Alternative B.
F	Livestock grazing limited to only upland and riparian nonserpentine plant communities outside of the ACEC.	Same as Alternative B.
G	No livestock grazing within the CCMA	Same as Alternative B.
Proposed Action	Same as Alternative A	Same as Alternative A, plus: Allow nonnative, naturalized plant species to be used in revegetation materials consistent with rangeland health standards.

Table 4.4-10 Vegetation disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Livestock grazing.

Soil by vegetation type	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↔	↔	↔	↔	↔	↓↓↓
Serpentine upland	↔	↔	↔	↔	↔	↔	↓↓↓
Nonserpentine riparian	↔	↔	↔	↔	↔	↔	↔
Nonserpentine upland	↔	↔	↔	↔	↔	↔	↔
Predicted vegetation loss →	A ~	B ~	C ~	D ~	E ~	F >	G

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D~E~F>G. "A~B" reads as A is approximately equal to B. "F> G" reads as: F is greater than G, or G is less than F.

Table 4.4-11 Summary of Vegetation Resource Management Actions for: Plant community restoration and fire management.

Alternative	**Impact:** Plant community restoration and fire management	**Management action:** Maintain vegetation integrity and diversity
A	Continued plant community restoration within disturbed riparian and upland serpentine plant communities and disturbed riparian and upland nonserpentine plant communities. Utilization of control burns for fuels reduction and habitat improvement.	Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Restore closed routes and degraded lands. Utilization of control burns.
B	Same as Alternative A.	Same as Alternative A, plus: Rehabilitate vegetation using local genotypes of native species for revegetation materials. Allow noninvasive, nonnative species to be used in revegetation materials.
C	Same as Alternative A.	Same as Alternative B.
D	Same as Alternative A.	Same as Alternative B.
E	Same as Alternative A.	Same as Alternative B.
F	Same as Alternative A.	Same as Alternative B.
G	Same as Alternative A.	Same as Alternative B.
Proposed Action	Same as Alternative A.	Same as Alternative A, plus: Rehabilitate vegetation using local genotypes of native species for revegetation materials. Allow noninvasive, nonnative species to be used in revegetation materials.

Table 4.4-12 Vegetation disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Plant community restoration and fire management.

Soil by vegetation type	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↔	↔	↔	↔	↔	↔
Serpentine upland	↔	↔	↔	↔	↔	↔	↔
Nonserpentine riparian	↔	↔	↔	↔	↔	↔	↔
Nonserpentine upland	↔	↔	↔	↔	↔	↔	↔
Predicted vegetation loss →	A ~	B ~	C ~	D ~	E ~	F ~	G

↔ = no change (existing condition). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D~E~F~G. "A~B" reads as A is approximately equal to B.

4.4.2 Overview of Impacts to Vegetation

This subsection provides an overview of impacts that occur under all alternatives. The background and overall impact assessment is provided here and, as needed, further analysis is provided for each alternative.

4.4.2.1 Vegetation Resources and Disturbance by Non-motorized Recreation

Non-motorized recreation activities including camping, hiking, hunting, and rockhounding can cause minor adverse impacts to vegetation resources. Of these activities, camping poses the greatest impact to vegetation resources since camping sites are repeatedly used. Repeated use of campsites can result in localized vegetation damage and removal (adverse). This is particularly true for serpentine riparian vegetation within the ACEC. The many level stream terraces adjacent to Clear Creek and other riparian areas within the CCMA were heavily used historically as OHV staging areas and camp sites. Although most of those terraces are now closed, some stream terraces remain open and continue to be used as campsites. Most campsites with the CCMA are located at designated campgrounds and staging areas, however, there are several small, popular informal campsites scattered throughout the CCMA. Foot traffic activities such as hiking, hunting, and rockhounding tend to be dispersed and not result in measurable adverse impacts to vegetation resources. Most hiking and hunting activities tend to occur primarily outside of the ACEC which are more vegetated and support more game animals, whereas most rockhounding activities are focused within the ACEC where there is a wide variety of rare minerals that appeal to collectors.

4.4.2.2 Vegetation Resources and Disturbance by Motorized Recreation

OHV recreation activities and motorized vehicle access for recreation can cause direct removal or damage to vegetation (adverse). Vegetation removal exposes soil and accelerates erosion (adverse). Currently, the majority of OHV activities within the CCMA are located within the Serpentine Area of Critical Environmental Concern. The ACEC contains sensitive vegetation resources. Due to the stressful conditions imposed by serpentine soils, vegetation within the ACEC is relatively sparse and very slow to recover following disturbance. Nonserpentine soils outside of the ACEC are comparatively more fertile and support a greater density of vegetation which recovers more rapidly following disturbance. Vegetation compliance monitoring is conducted by an interdisciplinary team of HFO specialists using

Rangeland Health Standards and Guidelines. The Standards and Guidelines apply to all land uses and not only livestock grazing. Variance from the Standards and Guidelines indicate that land health may be compromised and corrective management action may be required.

4.4.2.3 Vegetation Resources and Disturbance by Energy and Mineral Exploration

Energy and mineral development can result in long-term damage to- or permanent loss of vegetation (adverse). Like vehicle travel impacts, construction can cause direct removal of or damage to vegetation. Vegetation disturbance from construction is typically more intense compared to OHV (light vehicle) impacts due to the use of heavy equipment. Generally, the significance of vegetation loss depends on the type of impact, amount of area disturbed, plant community types affected, and capacity for the disturbed area to recover. These factors determine whether impacts to vegetation are short- or long-term. Impacts to vegetation from transmission lines and staging areas would be temporary, whereas impacts from building construction and open pit mining may be regarded as permanent as both vegetation and soil are removed down to bedrock.

Overall, the CCMA has moderate potential for mineral development. The New Idria serpentine mass (ACEC) is highly-mineralized and was historically, commercially mined for magnesite, chromite, cinnabar, and asbestos. The Gem mine, a privately-owned inholding within the CCMA, continues to mine and market benitoite. Most other mineral development within the CCMA has ceased due to depletion of near-surface marketable minerals and changing mineral markets and mineral regulation (i.e. asbestos ban in U.S.). The CCMA has moderate potential for energy development. Oil and gas development potential is very low as the New Idria serpentine mass (ACEC) which comprises 40% of the CCMA land area has no potential for fossil fuel resources. The remainder of the CCMA contains sedimentary formations which have not yielded significant oil and gas resources within the local area. Wind energy development has some potential as the CCMA contains some of the highest points in the Diablo Range. Under all alternatives, the San Benito Mountain Research Natural Area is withdrawn from energy and mineral development.

4.4.2.4 Vegetation Resources and Disturbance by Noxious Weed Invasion

Noxious and invasive weeds compete with desirable plant species for light, space, water, and nutrients (adverse). Invasive weeds may have detrimental effects on: 1) plant community structure and function, 2) wildlife habitat, 3) rare, threatened, and endangered special status species habitat, 4) forage production, 5) recreation, and 6) aesthetic quality. Invasive weed species may also increase the risk of wildfire because they are typically composed of fine fuels and become flammable as they age.

Land use activities that disturb or remove native plant cover may have a moderate impact on the spread of noxious and invasive weeds throughout the CCMA. Activities that reduce native plant productivity, vigor, or cover and results in soil disturbance reduce the competitive ability of the native plant species. Reduction of native species competitive ability, combined with soil disturbance, results in land becoming susceptible to invasion by noxious weeds. Land use activities that remove native vegetation and disperse invasive species seed include livestock grazing, oil and mineral exploration or other construction activities, and motorized vehicle travel. The duration and intensity of adverse impacts to vegetation resources from noxious and invasive weeds would depend on weed species, terrain, soils, climate, and area of occupation. An integrated pest management (IPM) approach including prescribed fire, mechanical, chemical, and biological treatments, and public outreach are beneficial to reducing the spread of noxious, invasive weeds.

An IPM for noxious weed abatement would be beneficial to improving native plant community structure and function. A weed IPM is a systematic approach that integrates all information and management tactics to prevent the introduction, establishment, and spread of noxious weeds. An effective IPM noxious weed program includes best management practices for weed abatement, including removal, adaptive management, post-treatment rehabilitation, and public outreach. An IPM program recognizes the specificity of noxious weed species and designs a specific abatement program for each. Weed control may include a combination of manual or mechanical removal, herbicides, or prescribed fire. The application of each will follow BLM procedures. Post-treatment management is essential to prevent the re-colonization of noxious weeds. Post-treatment may include methods such as soil stabilization and native plant establishment. Public outreach provides the public with information on the ecological and economic concerns of noxious weeds and ways to prevent the introduction, establishment, and spread of weeds. An IPM program is an effective, low-risk means of responding to noxious weed problems.

4.4.2.5 Vegetation Resources and Disturbance by Livestock Grazing Impacts

Livestock grazing has the potential to affect plant community structure, function, and composition on the 14 grazing allotments located at least partially within the CCMA. Inappropriate livestock management may result in the overgrazing of forage and browse plants and adverse impacts to soils (adverse). Proper livestock grazing, however, may improve forage production, reduce fine fuel loads, and control invasive species (beneficial). Vegetation structure, composition, and function are important components of rangeland health monitoring. Rangeland health monitoring is conducted by an interdisciplinary team of HFO experts using the BLM-approved monitoring approach. Variance from one or more of the standards may indicate that rangeland health has been compromised and corrective management action may be required in the form of revised vegetation management.

4.4.2.6 Vegetation Resources and Disturbance by Plant Community Restoration and Fire Management Impacts

Vegetation restoration is an important tool for restoring or improving function of degraded ecosystems (beneficial). Restoration has many different levels based on the initial condition of the ecosystem and the desired final condition of the ecosystem. Restoration of drastically-disturbed lands, such as mines and serpentine barrens may include erosion control and/or revegetation with native plant species which typically requires intensive soil amendment. Restoration of lands invaded by noxious, invasive species typically includes eradication of the invasive species, followed by establishment of native vegetation. The IPM plan for some noxious, invasive species includes prescribed fire. Restoration of climax plant communities such as decadent chaparral also involves prescribed fire. Although initial short-term restoration impacts may be detrimental to the ecosystem, the overall long-term effects are beneficial.

Fire can either be beneficial or detrimental to vegetation, depending on factors such as its severity, terrain, weather, fuel type and condition, and post-fire rehabilitation. Wildland fire is any non-structure fire occurring in rangeland or forest ecosystems; it includes prescribed fire, wildland fire use, and wildfire. Wildland fire that accomplishes resource management objectives is referred to as prescribed fire. Prescribed fires are typically fires planned and ignited by resource managers, although some result from other uncontrolled ignition sources and are subsequently used to achieve management purpose under carefully controlled conditions with minimal suppression costs known as wildland fire use (WFU). Wildfires are unplanned and undesirable fires that result from natural ignition, unauthorized human-caused fire, escaped WFU, or escaped prescribed fire. WFU is not approved for use in the CCMA. Prescribed fire may be used to achieve beneficial management objectives such as increasing forage production, improving wildlife habitat, or controlling noxious, invasive weeds. Many times, wildfire may have detrimental effects on vegetation because livestock forage, wildlife habitat, and special status plant

species and their habitats are burned. Soil erosion and weed invasion may be accelerated after a wildfire because the native vegetation has been removed. Vegetation recovery may be short- or long-term, depending on soils, terrain, climate, and lost plant community attributes. Some special status species and habitats may never recover from wildfire. Post-fire rehabilitation is usually necessary to return the area into a productive plant community that meets resource management objectives.

Fuels management is critical in the Planning Area to reduce the risk of fire to life and property, reduce the risk of catastrophic fire, create plant community diversity, and reduce fire intensity to protect natural and cultural resources. Prescribed fire is the main tool used by the HFO to manage fuels, however, non-fire fuels management tools are useful in areas where prescribed fire is not appropriate, such as in the wildland urban interface and in critical habitats. Non-fire management tools include mechanical and biological fuels and herbicides. Mechanical fuels treatment is the most common non-fire fuels management tool. The treatment involves the use of chain saws, chippers, weed eaters, mowers, and a masticator mounted on an all-terrain vehicle to manipulate woody fuels. Woody plant material may be piled and burned as a follow-up treatment. Control by biological fuels occurs in the form of cattle grazing to manage the amount and distribution of fine fuels. Herbicides are used on a limited basis to control unwanted vegetation that eludes prescribed fire or mechanical treatments. Plant debris may be left on site to provide soil organic matter and reduce soil erosion.

4.4.3 Impacts and Mitigation for Alternative A

4.4.3.1 Vegetation Disturbance by Non-motorized Recreation

Under Alternative A, non-motorized recreation will continue both within and outside of the ACEC. Camping impacts will continue to be the greatest within the ACEC, as associated with OHV user camping. As a result, both serpentine riparian and upland plant communities and nonserpentine riparian and upland plant communities will continue to be disturbed.

Alternative A management actions include: Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Maintain sustained yield of vegetation for consumptive and non- consumptive uses. Protect sensitive riparian and riparian vegetation.

4.4.3.2 Vegetation Disturbance by Motorized Recreation

Under Alternative A, both highway-licensed and green sticker vehicle recreation and its impacts will continue to be concentrated within the ACEC. Impacts outside of the ACEC will continue to be minor as few designated open routes exist outside of the ACEC. As a result, serpentine riparian and upland plant communities within the ACEC, which is generally sparse and slow to recover from disturbance, will continue to be disturbed. Highway-licensed and green sticker vehicle recreation will also continue within nonserpentine riparian and upland plant communities outside of the ACEC. Vehicle disturbance will continue to result in vegetation loss, resulting in accelerated erosion rates and sedimentation of local watersheds.

Alternative A management actions include: Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Maintain sustained yield of vegetation for consumptive and non- consumptive uses. Protect sensitive riparian and upland vegetation.

4.4.3.3 Vegetation Disturbance by Energy and Mineral Exploration

Under Alternative A, energy and mineral exploration will continue both within and outside of the ACEC, resulting in impacts to both serpentine riparian and upland plant communities and nonserpentine riparian and upland plant communities.

Alternative A management actions include: Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Maintain sustained yield of vegetation for consumptive and non- consumptive uses. Protect sensitive riparian and upland vegetation.

4.4.3.4 Noxious Weed Invasion

Under Alternative A, there will continue to be movement of weed seed on vehicles, humans (foot traffic), and livestock from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC.

Alternative A does not specify management actions for controlling noxious weeds.

4.4.3.5 Livestock Grazing

Under Alternative A, livestock grazing will continue both within and outside of the ACEC, resulting in impacts to serpentine riparian and upland plant communities and nonserpentine riparian and upland plant communities.

Alternative A management actions include: Provide a mosaic of vegetative communities and adequate plant cover to protect soil, watershed, and wildlife. Rangeland health monitoring is required.

4.4.3.6 Plant Community Restoration and Fire Management

Under Alternative A, restoration of closed routes and degraded lands will continue both within and outside of the ACEC, resulting in impacts to serpentine riparian and upland plant communities and nonserpentine riparian and upland plant communities. Control burns will continue to be used for fuels reduction and habitat improvement.

Alternative A management actions include: Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Restore closed routes and degraded lands. Utilization of control burns.

4.4.3.7 Mitigation

The mitigation measures incorporated into vegetation resource management actions described in Chapter 2 would have moderate long-term beneficial impacts on biological resources and water quality in CCMA.

4.4.4 Impacts and Mitigation for Alternative B

4.4.4.1 Vegetation Disturbance by Non-motorized Recreation

Under Alternative B, non-motorized recreation will continue both within and outside of the ACEC. Visitor use within the ACEC will be limited to ≤ 12 days. Camping impacts will continue to be the greatest within the ACEC, as associated with OHV user camping, but will be reduced relative to Alternative A due to visitor use limitations. As a result, there would be a minor decrease (beneficial) of non-motorized recreation impacts to serpentine riparian and upland plant communities as compared to Alternative A. Non-motorized recreation location and intensity outside of the ACEC would be unchanged and therefore non-motorized recreation impacts to nonserpentine riparian and upland plant communities would be unchanged compared to Alternative A

Management actions are the same as Alternative A, with the following additional management action: Mitigation or relocation of proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.

4.4.4.2 Vegetation Disturbance by Motorized Recreation

Under Alternative B, motorized recreation of each visitor within the ACEC would be limited to ≤ 12 days per year and motorized vehicle use would be restricted to outside of the proposed Dry Season Use Restriction period of April 15th through December 1st (extended 45 days compared to the current Dry Season Use Restriction period). As a result, vehicle recreation impacts to serpentine riparian and upland plant communities within the ACEC would be reduced (beneficial) as compared to Alternative A. Vehicle recreation location and intensity outside of the ACEC would be unchanged and therefore motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be unchanged as compared to Alternative A.

Management actions are the same as Alternative A, with the following additional management action: Mitigation or relocation of proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.

4.4.4.3 Vegetation Disturbance by Energy and Mineral Exploration

Alternative B vegetation disturbance impacts would be the same as Alternative A.

Management actions are the same as Alternative A, with the following additional management action: Mitigation or relocation of proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.

4.4.4.4 Noxious Weed Invasion

Under Alternative B, there would be a reduction (beneficial), but continued movement of weed seed on vehicles (as compared to Alternative A) from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC, coincident with greater restrictions in vehicle use. As a result, there would be less exotic species invasion into serpentine riparian and upland plant communities within the ACEC (beneficial). There would be continued movement of weed seed on humans (foot traffic) and livestock from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC.

Alternative B management actions include: Prevent and control noxious weed invasion. Develop an integrated pest management plan. Prioritize noxious weed eradication based on the BLM and California State list.

4.4.4.5 Livestock Grazing

Alternative B vegetation disturbance impacts would be the same as Alternative A.

Management actions are the same as Alternative A, with the following additional management action: Allow nonnative, naturalized plant species to be used in revegetation materials consistent with rangeland health standards.

4.4.4.6 Plant Community Restoration and Fire Management

Alternative B vegetation disturbance impacts would be the same as Alternative A.

Management actions are the same as Alternative A, with the following additional management action: Rehabilitate vegetation using local genotypes of native species for revegetation materials. Allow noninvasive, nonnative species to be used in revegetation materials.

4.4.4.7 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives B, C, and D include best management practices outlined in Appendix V.

4.4.5 Impacts and Mitigation for Alternative C

4.4.5.1 Vegetation Disturbance by Non-motorized Recreation

Impacts for Alternative C would be similar to those for Alternative B with visitor use restrictions. As a result, impacts to serpentine riparian and upland plant communities and nonserpentine riparian and upland plant communities would be unchanged as compared to alternative B.

Alternative C management actions would be the same as Alternative B.

4.4.5.2 Vegetation Disturbance by Motorized Recreation

Impacts for Alternative C would be similar to those for Alternative B. Motorized recreation would be subject to the same restrictions as Alternative B with the added restriction of only highway-licensed vehicles being permitted on county roads and the dry season route network and green-sticker motorcycle use being permitted only on single track trails. This is the same general use pattern for vehicle type on route type (full-sized vehicles on roads; motorcycles on single-track trails) that currently exists, so the level of motorized recreation impacts to serpentine riparian and upland plant communities would be expected to be about the same as Alternative B. Like Alternative B, motorized recreation location and intensity outside of the ACEC would be unchanged and therefore, motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be unchanged.

Alternative C management actions would be the same as Alternative B.

4.4.5.3 Vegetation Disturbance by Energy and Mineral Exploration

Alternative C vegetation disturbance impacts would be the same as Alternative A.

Alternative C management actions would be the same as Alternative B.

4.4.5.4 Noxious Weed Invasion

Alternative C vegetation disturbance impacts would be the same as Alternative B.

Alternative C management actions would be the same as Alternative B.

4.4.5.5 Livestock Grazing

Alternative C vegetation disturbance impacts would be the same as Alternative A.

Alternative C management actions would be the same as Alternative B.

4.4.5.6 Plant Community Restoration and Fire Management

Alternative C vegetation disturbance impacts would be the same as Alternative A.

Alternative C management actions would be the same as Alternative B.

4.4.5.7 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives B, C, and D include best management practices outlined in Appendix V.

4.4.6 Impacts and Mitigation for Alternative D

4.4.6.1 Vegetation Disturbance by Non-motorized Recreation

Alternative D represents a major shift in non-motorized recreation activities from inside to outside of the ACEC as new staging areas and campgrounds are established outside of the ACEC. With increased motorized recreation staging outside of the ACEC, there will be a major increase in OHV users camping outside of the ACEC (adverse). Likewise, improved access to hunting areas and improved camping opportunities outside of the ACEC will likely encourage more hunters to camp in those areas outside of the ACEC as well. As a result, there would be an even greater reduction of non-motorized recreation impacts to serpentine riparian and upland plant communities within the ACEC as compared to Alternative C (beneficial) and a major increase of non-motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC (adverse) as compared to Alternative C.

Alternative D management actions would be the same as Alternative B.

4.4.6.2 Vegetation Disturbance by Motorized Recreation

Alternative D represents a major shift in the location of motorized recreation from inside to outside of the ACEC. Under Alternative D, motorized recreation within the ACEC would be restricted to only highway-licensed vehicles on county roads and the dry season route network. All green sticker vehicle recreation would be relocated to outside of the ACEC. New staging areas and routes would be constructed through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River Zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for both motorized and non-motorized recreation. The result would be an even greater reduction of motorized recreation impacts to serpentine riparian and upland plant communities within the ACEC (beneficial) as compared to Alternative C, and a major increase of motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC (adverse) as compared to Alternative C.

Alternative D management actions would be the same as Alternative B.

4.4.6.3 Vegetation Disturbance by Energy and Mineral Exploration

Alternative D vegetation disturbance impacts would be the same as Alternative A.

Alternative D management actions would be the same as Alternative B.

4.4.6.4 Noxious Weed Invasion

Under Alternative D, there would be a further reduced (beneficial), but continued movement of weed seed on vehicles (relative to Alternatives B and C) from nonserpentine riparian and upland plant communities into serpentine riparian and upland plant communities, coincident with even greater vehicle use restrictions within the ACEC. As a result, there would be even less exotic species invasion into serpentine riparian and upland plant communities within the ACEC. There would likely be greatly increased (adverse) movement of weed seed on vehicles used within nonserpentine riparian and upland plant communities outside of the ACEC, coincident with greater anticipated vehicle use in those areas. Under Alternative D, there would be continued movement of weed seed on humans (foot traffic) and livestock from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC.

Alternative D management actions would be the same as Alternative B.

4.4.6.5 Livestock Grazing

Alternative C vegetation disturbance impacts would be the same as Alternative A.

Alternative D management actions would be the same as Alternative B.

4.4.6.6 Plant Community Restoration and Fire Management

Alternative C vegetation disturbance impacts would be the same as Alternative A.

Alternative D management actions would be the same as Alternative B.

4.4.6.7 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives B, C, and D include best management practices outlined in Appendix V.

4.4.7 Impacts and Mitigation for Alternative E

4.4.7.1 Vegetation Disturbance by Non-motorized Recreation

Non-motorized recreation under Alternative E would be further reduced (beneficial) as visitor use continued to be limited within the ACEC and less new routes are constructed outside of the ACEC as compared to Alternative D. Camping impacts would be reduced (beneficial) as compared to Alternative D as it is expected that there would be fewer OHV users and hunters. Under Alternative E, non-motorized recreation impacts to serpentine riparian and upland plant communities within the ACEC would be similar to Alternative D. Non-motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

Alternative E management actions would be the same as Alternative B.

4.4.7.2 Vegetation Disturbance by Motorized Recreation

Under Alternative E, motorized recreation within the ACEC would be similar to Alternative D with highway-licensed vehicles restricted to a scenic route network composed of T153 and R11 south of its intersection with T153. T153 and R11 south of its intersection with T153 primarily follow hill slopes some distance from streams (except for at upper Sawmill Creek). Motorized recreation outside of the ACEC would be slightly increased (adverse) as compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River Zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Due to the closure of R1, R11 north of the intersection with T153, and R15, which parallel and impact perennial streams within the ACEC, motorized recreation impacts to serpentine riparian plant communities within the ACEC would be reduced (beneficial) as compared to Alternative D and reduced even more than impacts to serpentine upland plant communities. Since vegetation impacts from the construction of the new routes outside of the ACEC are expected to be short term, and vegetation impacts from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

Alternative E management actions would be the same as Alternative B.

4.4.7.3 Vegetation Disturbance by Energy and Mineral Exploration

Under Alternative E, energy and mineral exploration would only be permitted outside of the ACEC. As a result, impacts to serpentine upland and riparian plant communities within the ACEC from energy and mineral exploration would cease (beneficial). Energy and mineral exploration impacts to nonserpentine riparian and upland plant communities outside of the ACEC would continue.

Alternative E management actions would be the same as Alternative B.

4.4.7.4 Noxious Weed Invasion

Under Alternative E, movement of weed seed on vehicles from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC would be similar to Alternative D. Movement of weed seed on vehicles within nonserpentine riparian and upland plant communities outside of the ACEC would be limited. Under Alternative E, there would be continued movement of weed seed on humans (foot traffic) and livestock from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC.

Alternative E management actions would be the same as Alternative B.

4.4.7.5 Livestock Grazing

Alternative E vegetation disturbance impacts would be the same as Alternative A.

Alternative E management actions would be the same as Alternative B.

4.4.7.6 Plant Community Restoration and Fire Management

Alternative E vegetation disturbance impacts would be the same as Alternative A.

Alternative E management actions would be the same as Alternative B.

4.4.7.7 Mitigation

Mitigation measures included in the management actions under Alternative E in Chapter 2 and Best Management Practices outlined in Appendix V would have major long-term benefits for soils and vegetation resources in CCMA because of major reductions in surface disturbing activities and increased emphasis on resources protection and restoration.

4.4.8 Impacts and Mitigation for Alternative F

4.4.8.1 Vegetation Disturbance by Non-motorized Recreation

Non-motorized recreation under Alternative F would be similar to Alternative E for use both within and outside of the ACEC. As such, non-motorized recreation impacts to serpentine riparian and upland plant communities within the ACEC and nonserpentine riparian and upland plant communities outside of the ACEC would be similar to Alternative E.

Alternative F management actions would be the same as Alternative B.

4.4.8.2 Vegetation Disturbance by Motorized Recreation

Under Alternative F, motorized recreation within the ACEC would not be permitted. Clear Creek Road (R1) would be decommissioned. As a result, there would be a major reduction (beneficial) of motorized recreation impacts to serpentine riparian and upland plant communities within the ACEC as compared to Alternative A. Motorized recreation outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Since vegetation impacts from the construction of the new routes outside of the ACEC are expected to be short term, and vegetation impacts from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

Alternative F management actions would be the same as Alternative B.

4.4.8.3 Vegetation Disturbance by Energy and Mineral Exploration

Alternative F vegetation disturbance impacts would be the same as Alternative E.

Alternative F management actions would be the same as Alternative B.

4.4.8.4 Noxious Weed Invasion

Under Alternative F, the movement of weed seed on vehicles from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC would cease, due to vehicle use not being permitted within the ACEC. As a result noxious weed invasion into serpentine riparian and upland plant communities within the ACEC would be drastically reduced (beneficial). Movement of weed seed on vehicles within nonserpentine riparian and upland plant communities outside of the ACEC would be limited. Under Alternative F, there would be continued movement of weed seed on humans (foot traffic) from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC. Movement of weed seed on livestock from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC would cease (beneficial) due to livestock grazing not being permitted within the ACEC.

Alternative F management actions would be the same as Alternative B.

4.4.8.5 Livestock Grazing

Under Alternative F, livestock grazing would only be permitted outside of the ACEC. As a result, impacts to serpentine riparian and upland plant communities within the ACEC from grazing would cease (beneficial). Grazing impacts to nonserpentine riparian and upland vegetation outside of the ACEC would continue.

Alternative F management actions would be the same as Alternative B.

4.4.8.6 Plant Community Restoration and Fire Management

Alternative F vegetation disturbance impacts would be the same as Alternative A.

Alternative F management actions would be the same as Alternative B.

4.4.9 Impacts and Mitigation for Alternative G

4.4.9.1 Vegetation Disturbance by Non-motorized Recreation

Under Alternative G, non-motorized recreation within the ACEC would not be permitted. As a result, impacts to serpentine riparian and upland plant communities from non-motorized recreation within the ACEC would cease (beneficial). Similar to Alternative F, non-motorized recreation outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River zones. As such, non-motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be similar to Alternative F.

Alternative G management actions would be the same as Alternative B.

4.4.9.2 Vegetation Disturbance by Motorized Recreation

Under Alternative G, motorized recreation within the ACEC would not be permitted. Clear Creek Road (R1) would not be decommissioned. As a result, motorized recreation impacts to serpentine riparian and upland plant communities within the ACEC would be reduced slightly less than Alternative F due to the fact that Clear Creek Road would not be decommissioned. Vehicle use outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Since impacts to vegetation from the construction of these few new routes are expected to be short term and impacts to vegetation from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be similar to Alternatives E and F.

Alternative G management actions would be the same as Alternative B.

4.4.9.3 Vegetation Disturbance by Energy and Mineral Exploration

Alternative G vegetation disturbance impacts would be the same as Alternative A.

Alternative G management actions would be the same as Alternative B.

4.4.9.4 Noxious Weed Invasion

Under Alternative G, the movement of weed seed on vehicles from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC would cease (beneficial), due to vehicle use not being permitted within the ACEC, similar to Alternative F. Movement of weed seed on vehicles within nonserpentine riparian and upland plant communities outside of the ACEC would be limited. Under Alternative G, there would be continued movement of weed seed on humans (foot traffic) within nonserpentine riparian and upland plant communities outside of the ACEC. No livestock grazing would be permitted within the CCMA, therefore, weed seed movement by livestock within the CCMA would cease.

Alternative G management actions would be the same as Alternative B.

4.4.9.5 Livestock Grazing

Under Alternative G, livestock grazing would not be permitted within the CCMA. As a result, impacts to serpentine and nonserpentine riparian and upland vegetation would cease (beneficial). Excessive mulch buildup may occur in nonserpentine grasslands. As a result, native herbaceous species within the grasslands may be adversely impacted through greater competition from invasive species and greater risk of catastrophic fire, due to increased fuel loads.

Alternative G management actions would be the same as Alternative B.

4.4.9.6 Plant Community Restoration and Fire Management

Alternative G vegetation disturbance impacts would be the same as Alternative A.

Alternative G management actions would be the same as Alternative B.

4.4.10 Impacts to Vegetation for the Proposed Action

4.4.10.1 Impacts from Non-motorized Recreation

Under the Proposed Action, non-motorized recreation will continue both within and outside of the ACEC. However, non-motorized recreation under the Proposed Action would be further reduced (beneficial) as visitor use continued to be limited within the ACEC, resulting in moderate long term beneficial impacts to serpentine riparian vegetation. Camping impacts within the ACEC would see a major long term reduction (beneficial) benefitting riparian vegetation communities.

The Proposed Action represents a moderate shift in non-motorized recreation activities from inside to outside of the ACEC as new access points and campgrounds are established outside of the ACEC. Likewise, improved access to hunting areas and improved camping opportunities outside of the ACEC will likely encourage more hunters to camp in those areas outside of the ACEC as well. As a result, there would be an even greater reduction of non-motorized recreation impacts to serpentine riparian and upland plant communities within the ACEC. It is likely there would be a moderate increase in camping outside of the ACEC (adverse) and a corresponding moderate increase in non-motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC.

4.4.10.2 Impacts from Motorized Recreation

Under the Proposed Action, motorized recreation within the ACEC would be limited to highway-licensed vehicles restricted to a *Scenic Touring Route*. The substantial limitations and reduction of routes within the would represent major long term reduction in impacts to riparian vegetation in the ACEC. Motorized recreation outside of the ACEC would be slightly increased (adverse) as compared to the No Action Alternative, due to the development of a limited number of access routes through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River Zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for motorized and non-motorized recreation. Since vegetation impacts from the development of new routes outside of the ACEC are expected to be short term, and vegetation impacts from their use as access routes are expected to be minimal; overall motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be short term minor adverse impacts.

4.4.10.3 Vegetation Disturbance by Energy and Mineral Exploration

Under the Proposed Action, energy and mineral exploration would only be permitted outside of the ACEC. As a result, impacts to serpentine upland and riparian plant communities within the ACEC from energy and mineral exploration would cease and provide long term moderate beneficial impacts. There is a potential for energy and mineral exploration impacts to nonserpentine riparian and upland plant communities outside of the ACEC, however as the potential for such development is low, it is unlikely.

4.4.10.4 Noxious Weed Invasion

Under the Proposed Action, there would be movement of weed seed on vehicles from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC that would be further reduced from the No Action Alternative, coincident with even greater vehicle use restrictions within the ACEC. As a result, there would be even less exotic species invasion into serpentine riparian and upland plant communities within the ACEC. There would likely be moderately increased (adverse) movement of weed seed on vehicles used within nonserpentine riparian and upland plant communities outside of the ACEC, coincident with greater anticipated vehicle use in those areas. There would also be continued minor movement of weed seed on humans (foot traffic) and livestock from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC.

4.4.10.5 Livestock Grazing

Under the Proposed Action livestock grazing would continue both within and outside of the ACEC, resulting in minor adverse impacts to serpentine riparian and upland plant communities and nonserpentine riparian and upland plant communities.

4.4.10.6 Plant Community Restoration and Fire Management

Management actions include: (1) Providing a mosaic of vegetative communities to protect soil, watershed, and wildlife. (2) Maintaining sustained yield of vegetation for consumptive and non-consumptive uses. (3) Protecting sensitive riparian areas and riparian vegetation, through mitigation or relocation of proposed activities within 100 feet of riparian vegetation, if the activities have the potential for negative impacts. (4) Conducting rangeland health monitoring. (5) Preventing and controlling noxious weed invasion. (6) Developing an integrated pest management plan. (7) Prioritizing noxious weed eradication based on the BLM and California State list. (8) Allowing nonnative, naturalized plant species to be used in revegetation materials consistent with rangeland health standards. (9) Restoring closed routes and degraded lands. (10) Utilization of control burns.

Under the Proposed Action, restoration of closed routes and degraded lands would continue both within and outside of the ACEC, resulting in moderate long term beneficial impacts to serpentine riparian and upland plant communities and nonserpentine riparian and upland plant communities. Control burns would provide long-term beneficial impacts on vegetation communities and wildlife habitat.

4.4.10.7 Mitigation

Mitigation measures included in the management actions under the Proposed Action in Chapter 2 and Best Management Practices outlined in Appendix V, would have major long-term benefits for soils, water quality, and vegetation resources in CCMA because of major reductions in surface disturbing activities and increased emphasis on resources protection and restoration.

4.4.11 Cumulative Effects

At present, the noxious invasive species yellow starthistle (*Centaurea solstitialis*) is found within Clear Creek Canyon from the confluence of Clear Creek with San Benito River up to Staging Area 1. The primary agents for long-distance seed dispersal of invasive species are road maintenance equipment and the undercarriage of motor vehicles.
The displacement of native vegetation and wildlife habitat would be considered a negative cumulative impact. The BLM is in the process of developing a comprehensive weed management program for the CCMA and surrounding area, which would contribute to mitigating these impacts.

In general, the major beneficial cumulative impacts of selecting management actions that result in overall reductions to vegetation disturbance would be increased vegetation cover; which would provide increased protective cover for soils from erosion, benefitting downstream water quality, and improving habitat quality for wildlife within the region.

4.4.11.1 Cumulative Effects of Alternatives A - D

Alternatives A – D have the greatest potential for yellow starthistle to spread to additional areas within the CCMA and displace native vegetation and wildlife habitat in the Planning Area because these alternatives would allow intense OHV recreation to continue on a large network of routes and trails.

4.4.11.2 Cumulative Effects of Alternatives E, F, and G

Alternatives E \has lower potential for yellow starthistle to spread to additional areas within the CCMA than Alternatives A - D because it would only allow vehicle use on one route to provide access for non-motorized recreation opportunities.

Alternatives F and G have the lowest potential for yellow starthistle to spread to additional areas because they would either restrict access in the CCMA to foot traffic only (Alt. F) or prohibit all public use in the Serpentine ACEC.

4.4.11.1 Cumulative Effects of the Proposed Action

Compared to Alternatives A – D, the Proposed Action is less likely to contribute to the spread of yellow starthistle to additional areas and displace native vegetation and wildlife habitat in the Planning Area. Although there is more potential for cumulative effects than under Alternatives F and G, BLM would mitigate these effects through early detection and rapid response to any new weed infestations in the CCMA.

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4.5 Biological Resources – Fish & Wildlife

For ease of plan reference, the management goals from Chapter 2 are reiterated here:

- The goal for management of fish and wildlife is to provide diverse, structured, resilient, and connected habitat on a landscape level to support viable and sustainable populations of wildlife, fish, and other aquatic organisms.

4.5.1 Introduction

This section describes the effects and potential impacts of implementing the Proposed Action presented in Chapter 2 on those resources identified in Chapter 3. With respect to wildlife habitat, Alternative A would continue the management direction outlined in the 1984 Hollister Resource Management Plan (RMP) as amended. The 1984 Hollister RMP does not address the potential changes and impacts on natural resources within the Planning Area, such as significant population growth, increased recreation uses, and acquisition of additional Bureau of Land Management (BLM)-managed lands. The Proposed Action would also continue management of wildlife habitat, but would also provide for conservation of natural resources, emphasizing habitat enhancement to increase commodity production (i.e., game species), and public access to BLM lands.

4.5.2 Overview of Impacts

This subsection provides an overview of impacts that occur under all alternatives, divided into those management actions that occur within this resource program and those management actions that fall under other resource programs. The background and overall impact assessment is provided here, and further analysis, as needed, such as the location of severity of the impact, is provided for each alternative.

4.5.2.1 Wildlife Habitat Management Actions

Habitat Maintenance, Protection, or Improvement

The overarching goal of managing for wildlife is to maintain and improve habitat. Strategies for habitat improvement and maintenance include simple protection (administrative closure, exclusion fencing), stabilization (streambank armoring), and restoration (revegetation and reintroduction).

Goals that promote water quality and vegetative resources would tend to also promote wildlife habitat. Impacts from management actions on water resources, vegetation, or special-status species can also have direct effects on wildlife habitat. These actions include watershed, riparian, or vegetation restoration efforts; plant collection; and commercial woodcutting. In general, watershed improvement, riparian revegetation, and other restoration and stabilization efforts would benefit wildlife because healthy water and plant communities are essential to wildlife habitat. Narrow conflicts do occasionally arise. An example of such a conflict is the discovery that giant kangaroo rats, an endangered species, promote the spread of nonnative grassland species, causing a potential conflict between kangaroo rat management and native plant restoration. Such instances are generally uncommon.

Collection of wildflowers, seeds, seedlings, rhizomes, stolons, roots, and whole plants for commercial and non-commercial purposes could have detrimental effects on native plant populations, especially on special status species. The impacts of collecting whole plants or plant parts would have short- or long-term implications, depending on plant species, reproductive strategies, type of tissues removed, and vigor.

Commercial woodcutting could degrade plant communities and watersheds by compacting soils, decreasing soil-water infiltration, increasing soil erosion, encouraging weed proliferation, and decreasing

aesthetic quality. Conversely, woodcutting may be used to remove unwanted trees to achieve specific management needs, such as increasing forage production or decreasing wildland fire risk. Additionally, commercial woodcutting can alter the types of habitat available for wildlife species. For example, the primary succession or pioneer plant community that occurs after commercial woodcutting has a different species composition with a limited overstory stratum and an increased herbaceous layer. This type of habitat would be attractive to the deer population but would provide limited habitat for avian species because of the limited tree cover.

4.5.2.2 Other Management Actions

Impacts on wildlife habitat from other management actions include direct habitat loss, direct mortality, habitat fragmentation, habitat modification, and other nuisances such as noise, encounters with humans and dogs. Impacts would vary depending upon the type of surface disturbance and location within the landscape. Activities within the Planning Area that may affect habitat include woodcutting and plant collection; oil and gas development; new construction activities, such as road construction and utility projects; recreational activities; and grazing.

BLM has established procedures and policies that assess the effects of existing and proposed projects on BLM-managed lands. BLM would be responsible for analyzing potential impacts to ensure that activities do not cause significant adverse effects on the habitats that support various wildlife species.

Fire Management

High-intensity fires, such as wildfires, can devastate vegetation communities that provide habitat for wildlife species. Reducing the risk of high-intensity wildfires by reducing the fuels available for fire would improve vegetation communities and habitat for wildlife species. Wildland fire management includes using prescribed fire and non-fire fuel treatments to modify vegetation communities to achieve beneficial uses of wildland resources.

Prescribed fire could be used to reduce the amount of hazardous fuels, improve plant species diversity, increase livestock and game forage production, abate noxious and invasive weeds, and improve wildlife habitat. Prescribed fire would be used particularly in chaparral vegetation to reduce hazardous fuel, improve wildlife habitat, and enhance watersheds. Prescribed burning can also reduce the density of inedible nonnative plants such as yellow star thistle that displace native plants, such as perennial grasses, that provide high-quality forage for mule deer. A yellow star thistle control program is in its fifth year at CCMA and future projects are in the planning stage. A prescribed burn to restore early-seral forage to areas currently dominated by old-growth chamise (*Adenostoma fasciculatum*) is planned for Condon Peak (Condon Zone).

Non-fire fuels management tools include mechanical and biological controls. Mechanical fuels treatment is the most common and includes using chain saws, chippers, weed-eaters, mowers, and a masticator mounted on an all-terrain vehicle. Woody plant material may be piled and burned as a follow-up treatment. Biological controls such as cattle grazing manage the amount and distribution of fire fuels.

Fuels reduction treatments would reduce the excessive amounts of built-up fuel and decrease the risk of high-intensity wildfires. Such treatments would also reduce the influence of woody vegetation on the associated herbaceous understory. Herbaceous plant cover and density would increase after fuels treatment. This increase would benefit grazing animals, but could be adverse to animals that use the woody habitat, since the latter would need to relocate. After the fuels treatment, woody plants would return and could regain dominance in some areas, depending on the climate and post-fire strategies.

Fire and non-fire treatments would result in short-term adverse impacts on habitat, including vegetation trampling and soil compaction or erosion. Over the long-term, however, the use of prescribed fire and non-fire fuels management would improve wildlife habitat, increase habitat diversity by controlling non-native and noxious weed species, and increase forage production in areas of tule elk and mule deer populations.

Livestock Grazing

Grazing throughout an allotment is not uniform because of differences in terrain, forage quantity and quality, weather, and water availability. Livestock may affect sensitive plant communities, wildlife habitat, or special status species habitat through grazing and trampling. Rangeland improvements such as roads or fences can impede the movement of wildlife and potentially result in direct mortality. Alternatively, certain levels of grazing have been found to be beneficial to maintaining habitat for wildlife.

Sensitive habitat management and protection within grazing allotments will be accomplished in Allotment Grazing Plans. The Hollister Field Office (HFO) would work with grazing lessees to minimize potential impacts by placing salt licks, watering facilities, and supplemental feeding sites away from sensitive habitats. Appropriate levels of livestock grazing would be attained through implementation of seasons of use, fencing, strategic placement of watering and salting sites, and animal numbers.

Energy and Mineral Development

Energy and mineral development has the potential to impact habitat that supports wildlife species by clearing vegetation, increasing the potential for soil erosion, altering topography, and increasing the potential to introduce non-native and noxious weed species. New roads and additional vehicles in these areas may lead to increased animal disturbance and direct contact between wildlife and humans. Activities that cause impacts on wildlife habitat such as placement of new energy and mineral development sites within the landscape, or new access roads, would be evaluated for potential impacts on wildlife species and their habitat.

Only up to approximately 10 oil and gas wells are expected to be developed over the next 15 to 20 years, with a total disturbance of 74 acres. For wind energy projects, according to the BLM's 2005 Wind Energy Development Programmatic Environmental Impact Statement, the impacted areas would represent no more than five to 10 percent of the entire project area.

Recreation and Access

Motorized vehicle access and other high-impact recreational activities have the potential to impact wildlife and damage their habitat. Access or travel on non-approved routes damages those areas that are intended to remain undisturbed by the public. Potential impacts may include direct mortality from vehicles, damage to habitat from vehicles, and nuisances to wildlife and habitat. Indirect effects include the introduction of nonnative seeds to natural areas and alteration in abundance of certain species (such as raccoons or ravens) due to increased garbage and litter.

4.5.3 Impacts and Mitigation for Alternative A, B, C, and D

4.5.3.1 Wildlife Habitat Management Actions

Habitat Maintenance, Protection, or Improvement

In keeping with the goals and objectives outlined in the 1984 RMP, Alternative A would maintain or improve certain key habitat types. Prescribed burns to maintain uneven-aged brushfields would continue, habitat would be maintained and enhanced for upland game species, and sensitive areas would be protected by fencing, barricades, and/or authorized seasons of use to exclude access by livestock and vehicles.

Alternative A would require the management of native plant populations and communities for a sustained yield for consumptive and non-consumptive uses. Additionally, the management actions affecting water quality would serve to improve or protect water resources from siltation and sedimentation resulting from road and trail development and maintenance. These actions would have beneficial effects on wildlife habitat.

No specific management action for vegetation collection is specified under Alternative A. The lack of management actions controlling the collection of vegetation could result in short- or long-term adverse impacts on habitat.

Under Alternative A, the existing woodcutting permits would continue to be considered on a case-by-case basis. Issuance of a permit would require the implementation of current best management practices to minimize impacts on vegetation and to limit soil erosion, and would require buffer setbacks from stream and riparian areas. This would not result in substantial or long-term adverse impacts on habitat.

Under alternatives B-D, active management to improve wildlife populations would occur, including control of nonnative species, preservation of woody habitat such as downed trees, removal of manmade barriers, active maintenance of wildlife-specific water developments such as guzzlers, and restoration of native fish and wildlife species. Alternatives B-D also include protection of raptor nests from disturbance. Research on raptor behavior has identified a range of buffer distances from nests and perch sites sufficient to reduce by 90% the direct disturbance from human activities. Two hundred (200) meters (=1/8 mile) is a conservative distance that would be sufficient to encompass the behavioral responses of raptors present at CCMA (Craig 2002 and references therein). In order to provide additional protection to T&E raptors, a doubling of this distance to 400 meters (1/4 mile) will unequivocally afford sufficient protection to reduce the potential of harassment to near zero. All of these actions would have moderate long-term beneficial effects on wildlife habitat because of the increase in suitable areas for wildlife in CCMA.

4.5.3.2 Other Management Actions

Fire and Prescribed Burns

Alternative A would continue to use prescribed fires to maintain uneven-aged chaparral brushland habitat, and would provide a diversity of vegetation communities to support wildlife species. Chaparral habitat is prone to intense burning; it has dense growth, and plant species within the environment typically have dry evergreen leaves. As a result, the chaparral plant species have adapted to survive repeated fires. Fire within chaparral habitat spreads rapidly and extensively if the occurrence of fire has been minimal.

Prescribed burning to reduce chaparral would occur in Condon Peak, Byles Canyon, San Carlos Bolsa, Sampson Peak and Goat Mountain areas. Approximately 21000 acres would be burned in the Tucker management zone and 14000 in the Condon Peak zone. Prescribed burning would be use to improve wildlife habitat in SBMRNA under the direction of a botanist. Prescribed burning would also be conducted to control yellow star thistle and medusahead grass. Areas burned in the Natural Area will not be reseeded to avoid importing nonnative competitors.

While these measures for prescribed fires would have short-term adverse impacts on habitat including trampling of vegetation and soil erosion, there is a long-term benefit of protecting these areas from severe wildland fire and restoring habitat that has been be degraded by invasive nonnative plant species.

Alternatives B-D would incorporate all the beneficial impacts of alternative A. Prescribed burning in the Condon Peak, Byles Canyon, San Carlos Bolsa, Sampson Peak and Goat Mountain would be reduced. Burning in the SBMRNA would be conducted to maintain the "naturalness" of the area. Although the benefits of wildland fire on wildlife habitats would be reduced if prescribed burns are not conducted, the overall impact on wildlife habitat relative to existing conditions would be neutral.

Livestock Grazing

Alternative A-E includes 22,140 acres of allotted grazing lands in CCMA. This alternative would ensure that livestock watering developments will be managed to provide safe drinking water for wildlife. This action is a beneficial impact on water availability for wildlife needs. Alternative F would allocate grazing on 20,154 acres, and exclude grazing on 1,986 acres of public lands within the Serpentine ACEC. Although water availability will be reduced under alternatives F and G relative to alternatives A-E, the overall effect relative to a baseline, non-human-occupied landscape is neutral. Some benefit might accrue to wildlife populations that compete with cattle, e.g. elk, which destroy fences and reduce forage.

Alternative G would prohibit grazing altogether in CCMA and therefore reduce overall grazed acres to 0. Relative to alternative F, water availability would be substantially reduced but the baseline effect would still be considered neutral. Wildlife that competes with cattle would substantially benefit from such a large area being excluded from grazing. However, grazing has been found to have the beneficial effects of reducing nonnative annual grasses which outcompete native vegetation with concomitant effects on wildlife; therefore, reduction in grazing on a large scale could have unknown potential negative effects on wildlife.

Energy and Mineral Development

Alternative A would withdraw Clear Creek Canyon and the SBMRNA from energy and mineral development, with concomitant reduction in negative wildlife habitat impacts. Elsewhere energy and mineral exploration and development would proceed on a case-by-case basis. Energy and mineral development can result in short-term to permanent loss of vegetation and adverse impacts on local water quality. While development would require certain mitigation measures, some of the disturbance would be unavoidable. However, the overall strategy for minerals development is to proceed under principles of balanced multiple-use management, which would minimize impacts to wildlife habitat.

Alternatives B-C would exclude the San Benito Mountain WSA from wind energy development, with a corollary reduction in wildlife habitat impacts.

Alternatives D would prohibit leasing in the ACEC and withdraw ACEC from locatable mineral entry, with a further reduction in impacts to wildlife habitat relative to alternatives A-C.

Alternative G would pursue mineral withdrawal throughout CCMA and exclude wind development from CCMA, reducing impacts to wildlife habitat from energy and mineral activities to a minimum.

Recreation and Access

Recreational use:--Alternative A would continue the allowable "limited" use of existing roads for motorized vehicles at CCMA. High-impact recreational activities such as motorized recreational touring can cause direct removal or crushing of vegetation as well as soil compaction and increased erosion,

which lead to impacts on water quality. Impacts would be reduced by limiting vehicle access to roads and barrens and prohibiting camping in SBMRNA. Shooting would be prohibited in Clear Creek Canyon, with a potential beneficial effect on wildlife. Dry season restrictions would also be enforced, resulting in reduced impacts to wildlife.

Under alternative B, night visitation to the Serpentine ACEC would be prohibited, leading to a substantial reduction in overall wildlife habitats and specific reductions in disturbance to nocturnal species. In addition, special recreation permits for events would be prohibited, reducing impacts to wildlife habitat.

Alternative C would limit OHV use to adults over 18 years old and designate 150 miles of trails for motorcycle use only. The reduction in visitor use commensurate with that portion of the OHV user population under 18 would result in a substantial reduction in impacts to wildlife habitat compared to the first two alternatives.

Alternatives D would limit shooting in CCMA due to limited access in the ACEC or increased use outside the ACEC, which would result in reduced disturbance to wildlife from noise and illegal hunting, reduction in litter (targets and casings), and a general reduction in impacts to wildlife habitat from shooting.

Among the range of alternatives, Alternative G provides for the least amount of public recreation in CCMA and the most beneficial impacts to wildlife within the ACEC. In areas outside the ACEC, impacts will be limited to those that arise from hunting and non-motorized recreation activities, which are predicted to have minimal impacts on wildlife other than transitory disturbance.

Visitor services:--Alternative A would develop access for hunters into Condon Peak and San Carlos Bolsa, with a concomitant minor increase in wildlife disturbance and habitat impacts.

Alternatives B-D would emphasize protection of natural resources, including temporary closing of recreation sites to protect wildlife habitat. Impacts to wildlife habitat would be neutral or beneficial.

Interpretation and Education:--Alternative A would provide for enhanced education on appropriate OHV use in CCMA, resulting in reductions to wildlife impacts from inappropriate and illegal OHV operation.

Alternatives B-D would also provide educational materials relevant to appropriate use of public lands, and would have a neutral or beneficial effect on wildlife habitat relative to alternative A.

Lands and Realty

Alternative A would retain lands of significant recreation or habitat value, and dispose of, acquire, or exchange lands to ensure more efficient management. Acquisition of lands with high biological resource value would have a long-term beneficial impact on wildlife habitat. However, acquisition is highly dependent on availability of suitable lands and funding, and therefore assessment of actual impacts would be speculative.

Alternative B would prioritize acquisitions with a high value for biological resources. Alternative C would rank acquisitions for multiple resources. Alternative D would list by priority acquisition of lands with a high recreation potential. Alternative B would likely be the most beneficial for wildlife habitat. Acquisition is highly dependent on availability of suitable lands and funding, however, and therefore assessment of actual impacts would be speculative.

Alternatives B and C would make approximately 3,300 acres available for disposal in the Tucker, Condon, and San Benito River zones. Impacts on wildlife habitat from disposal of public lands would be

negative and long-term based on the potential for these lands to be privately developed. Adverse impacts in the San Benito River and Condon zones would be minor because of the relatively small size of the parcels. Impacts in the Tucker zone would be moderate or major based on the amount of lands that would be available for disposal and potential modification of habitat that is part of an on-going elk preservation program between the California DFG and private land owners in the area.

4.5.3.3 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Potential impacts on wildlife species and their habitat from mineral and energy production, recreation, livestock grazing, wildfires, and woodcutting may be identified through Rangeland Health Monitoring. Additional mitigation measures, to be determined on a case-by-case basis, may be required to avoid, reduce, or minimize potential environmental impacts. Measures would include maintenance of watersheds and riparian areas, use of fencing and rock barriers around sensitive areas, and use of stipulations from the BLM's 1993 Oil and Gas Management Plan.

4.5.4 Impacts and Mitigation Common to Alternatives E, F, and G

4.5.4.1 Wildlife Habitat Management Actions

Habitat Maintenance, Protection, or Improvement

Under Alternatives E-F, active management to improve wildlife populations would occur, including control of nonnative species, preservation of woody habitat such as downed trees, removal of manmade barriers, active maintenance of wildlife-specific water developments such as guzzlers, and restoration of native fish and wildlife species. Alternatives E, F, and G also include protection of raptor nests from disturbance. Research on raptor behavior has identified a range of buffer distances from nests and perch sites sufficient to reduce by 90% the direct disturbance from human activities. Two hundred (200) meters (=1/8 mile) is a conservative distance that would be sufficient to encompass the behavioral responses of raptors present at CCMA (Craig 2002 and references therein). In order to provide additional protection to T&E raptors, a doubling of this distance to 400 meters (1/4 mile) will unequivocally afford sufficient protection to reduce the potential of harassment to near zero. All of these actions would have moderate long-term beneficial effects on wildlife habitat because of the increase in suitable areas for wildlife in CCMA.

4.5.4.2 Other Management Actions

Water and Biological Resources - Vegetation

Under Alternatives E, F and G, common management actions are listed that aim to protect water quality in the Planning Area. Compared to Alternative A, the actions common to Alternatives E, F and G represent a more defined and proactive approach to protecting water quality in the Planning Area.

Alternatives E, F and G would also aim to maintain or improve plant community ecological values, process, and productivity, and biological diversity. Rehabilitation of areas disturbed by wildland fires, mineral or energy extraction, grazing, recreation, or other activities would stabilize soils and promote the development of desirable plant communities. Additional detail is provided under each alternative.

Fire Management

Fire management actions under Alternatives E-G would have the same beneficial impacts of alternative A even though prescribed burning in the Condon Peak, Byles Canyon, San Carlos Bolsa, Sampson Peak and

Goat Mountain would be reduced. Burning in the SBMRNA would be conducted to maintain the "naturalness" of the area. Although the benefits of wildland fire on wildlife habitats would be reduced if prescribed burns are not conducted, the overall impact on wildlife habitat relative to existing conditions would be neutral because of the historic low frequency of prescribed fire and mechanical fuels treatments within the ACEC/RNA.

Livestock Grazing

Where livestock grazing is found to limit achievement of multiple-use objectives, actions to control grazing intensity, duration, timing, and deferment would be required to meet physiological requirements of key plant species or other resource objectives. If new information demonstrates that livestock grazing is not compatible with conservation or preservation of threatened and endangered or sensitive species, livestock grazing would not be available on these areas. Spring developments to provide water for livestock and wildlife would usually be fenced to prevent trampling. Livestock grazing would be used as appropriate for habitat improvement, fuels reduction, or other resource management objectives.

Energy and Mineral Development

Alternatives D-F would prohibit leasing in the ACEC and withdraw 30,000 acres of public lands from locatable mineral entry, resulting in a further reduction adverse in impacts to wildlife habitat relative to alternatives A-C.

Alternative G would pursue mineral withdrawal throughout CCMA and exclude wind development from CCMA, reducing impacts to wildlife habitat from energy and mineral activities to a minimum.

Recreation and Access

Alternative D-F would limit shooting in CCMA due to limited access in the ACEC or increased use outside the ACEC, which would result in reduced disturbance to wildlife from noise and illegal hunting, reduction in litter (targets and casings), and a general reduction in impacts to wildlife habitat from shooting.

Among the range of alternatives, Alternative G provides for the least amount of public recreation in CCMA and the most beneficial impacts to wildlife within the ACEC. In areas outside the ACEC, impacts will be limited to those that arise from hunting and non-motorized recreation activities, which are predicted to have minimal impacts on wildlife other than transitory disturbance.

Visitor services: Alternatives E-G would provide enhanced access to Condon, Tucker and Cantua management zones for hunting and other recreation consistent with protection of natural values. The resulting net increase, if any, in visitor use is unknown. Increased visitor use and development of facilities would be expected to lead to some increase in impacts to wildlife from direct disturbance and habitat degradation. Alternative G would exclude all visitors from CCMA, with concomitant benefits to wildlife.

Interpretation and Education: Alternative E-G would provide educational materials relevant to appropriate use of public lands, and would have a neutral or beneficial effect on wildlife habitat relative to alternative A.

Lands and Realty

Priorities for acquisitions under Alternatives E, F, and G would have similar benefits on wildlife habitat as Alternative B with a high value for biological resources. However, Alternatives E and G would make approximately 3,300 acres available for disposal in the Tucker, Condon, and San Benito River zones.

Impacts on wildlife habitat from disposal of public lands would be negative and long-term based on the potential for these lands to be privately developed. Adverse impacts in the San Benito River and Condon zones would be minor because of the relatively small size of the parcels. Impacts in the Tucker zone would be moderate or major based on the amount of lands that would be available for disposal and potential modification of habitat that is part of an on-going elk preservation program between the California DFG and private land owners in the area.

4.5.4.3 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Potential impacts on wildlife species and their habitat from mineral and energy production, recreation, livestock grazing, wildfires, and woodcutting may be identified through Rangeland Health Monitoring. Additional mitigation measures are required to avoid, reduce, or minimize potential environmental impacts. Common to Alternatives E, F, and G are measures to use fire to improve wildlife habitat, to limit the use of fire retardant drops to prevent damage to vernal pools, to relocate man-made barriers that substantially impede migration outside of wildlife travel corridors, to reduce or rehabilitate redundant and damaging routes, and to use "no surface occupancy" stipulations.

4.5.5 Impacts to Fish & Wildlife from the Proposed Action

4.5.5.1 Wildlife Habitat Management Actions

Habitat Maintenance, Protection, or Improvement

Under the Proposed Action, active management to improve wildlife populations would occur, including control of nonnative species, preservation of woody habitat such as downed trees, removal of manmade barriers, active maintenance of wildlife-specific water developments such as guzzlers, and restoration of native fish and wildlife species. Management actions also include protection of raptor nests from disturbance. Research on raptor behavior has identified a range of buffer distances from nests and perch sites sufficient to reduce by 90% the direct disturbance from human activities. Two hundred (200) meters (=1/8 mile) is a conservative distance that would be sufficient to encompass the behavioral responses of raptors present at CCMA (Craig 2002 and references therein). In order to provide additional protection to T&E raptors, a doubling of this distance to 400 meters (1/4 mile) will unequivocally afford sufficient protection to reduce the potential of harassment to near zero. All of these actions would have moderate long-term beneficial effects on wildlife habitat because of the increase in suitable areas for wildlife in CCMA.

Prescribed burns to maintain uneven-aged brushfields would continue, habitat would be maintained and enhanced for upland game species, and sensitive areas would be protected. Management of native plant populations and communities would be directed for a sustained yield for consumptive and non-consumptive uses. Additionally, the management actions affecting water quality would serve to improve or protect water resources from siltation and sedimentation resulting from road and trail development and maintenance. These actions would have beneficial effects on wildlife habitat.

4.5.5.2 Impacts from Other Management Actions under the Proposed Action

Water and Biological Resources - Vegetation

Under the Proposed Action, management actions are identified that aim to protect water quality in the Planning Area. These actions represent a more defined and proactive approach to protecting water quality in the Planning Area. Management emphasis would also aim to maintain or improve plant community ecological values, process, and productivity, and biological diversity. Rehabilitation of areas disturbed by

wildland fires, mineral or energy extraction, grazing, recreation, or other activities would stabilize soils and promote the development of desirable plant communities.

Fire Management

Management actions would continue to use prescribed fires to maintain uneven-aged chaparral brushland habitat, and would provide a diversity of vegetation communities to support wildlife species. Chaparral habitat is prone to intense burning; it has dense growth, and plant species within the environment typically have dry evergreen leaves. As a result, the chaparral plant species have adapted to survive repeated fires. Fire within chaparral habitat spreads rapidly and extensively if the occurrence of fire has been minimal. Prescribed burning would be use to improve wildlife habitat in SBMRNA under the direction of a botanist. Prescribed burning would also be conducted to control yellow star thistle and medusahead grass. Areas burned in the Natural Area will not be reseeded to avoid importing nonnative competitors.

While these measures for prescribed fires would have short-term adverse impacts on habitat including trampling of vegetation and soil erosion, there is a long-term benefit of protecting these areas from severe wildland fire and restoring habitat that has been be degraded by invasive nonnative plant species.

While these measures for prescribed fires would have short-term adverse impacts on habitat including trampling of vegetation and soil erosion, there is a long-term benefit of protecting these areas from severe wildland fire and restoring habitat that has been be degraded by invasive nonnative plant species.

Fire management actions under the Proposed Action would have the same beneficial impacts of the No Action alternative even though prescribed burning in the Condon Peak, Byles Canyon, San Carlos Bolsa, Sampson Peak and Goat Mountain would be reduced. Burning in the SBMRNA would be conducted to maintain the “naturalness” of the area. Although the benefits of wildland fire on wildlife habitats would be reduced if prescribed burns are not conducted, the overall impact on wildlife habitat relative to existing conditions would be neutral because of the historic low frequency of prescribed fire and mechanical fuels treatments within the ACEC/RNA.

Livestock Grazing

The Proposed Action includes 22,140 acres of allotted grazing lands in CCMA and would ensure that livestock watering developments will be managed to provide safe drinking water for wildlife. This action is a beneficial impact on water availability for wildlife needs. Where livestock grazing is found to limit achievement of multiple-use objectives, actions to control grazing intensity, duration, timing, and deferment would be required to meet physiological requirements of key plant species or other resource objectives. If new information demonstrates that livestock grazing is not compatible with conservation or preservation of threatened and endangered or sensitive species, livestock grazing would not be available on these areas. Spring developments to provide water for livestock and wildlife would usually be fenced to prevent trampling. Livestock grazing would be used as appropriate for habitat improvement, fuels reduction, or other resource management objectives. Grazing has been found to have the beneficial effects of reducing nonnative annual grasses which outcompete native vegetation with concomitant effects on wildlife; therefore, continued grazing on allotted lands within CCMA would have long term beneficial effects on wildlife.

Energy and Mineral Development

The Proposed Action would prohibit leasing in the ACEC and withdraw 30,000 acres of public lands in the ACEC from locatable mineral entry, with a further reduction in impacts to wildlife habitat relative to the No Action alternative. Elsewhere energy and mineral exploration and development would proceed on

a case-by-case basis. Energy and mineral development can result in short-term to permanent loss of vegetation and adverse impacts on local water quality. While development would require certain mitigation measures, some of the disturbance would be unavoidable. However, the overall strategy for minerals development is to proceed under principles of balanced multiple-use management, which would minimize impacts to wildlife habitat.

Recreation and Access

Recreational use:--Shooting would be prohibited in Clear Creek Canyon, with a potential beneficial effect on wildlife. The Proposed Action would limit shooting in CCMA due to limited access in the ACEC which would result in reduced disturbance to wildlife from noise and illegal hunting, reduction in litter (targets and casings), and a general reduction in impacts to wildlife habitat from shooting. In areas outside the ACEC, impacts will be limited to those that arise from hunting and non-motorized recreation activities, which are predicted to have minimal impacts on wildlife other than transitory disturbance. In general, in the ACEC limitations on motorized vehicle use and access restrictions would have long term beneficial impacts to wildlife.

Visitor services: Enhanced access to Condon, Tucker and Cantua management zones for hunting and other recreation would consistent with protection of natural values. There would likely be a resulting net increase in visitor use in these areas; however providing better access in all these areas may help disperse use and resulting impacts. Increased visitor use and development of facilities would be expected to lead to a minor increase in impacts to wildlife habitat from direct disturbance and habitat degradation.

Interpretation and Education: The Proposed Action would provide enhanced educational materials relevant to appropriate use of public lands, and would have a beneficial effect on protection of wildlife habitat.

Lands and Realty

The Proposed Action would retain lands of significant recreation or habitat value, and dispose of, acquire, or exchange lands to ensure more efficient management. Acquisition of lands with high biological resource value would have a long-term beneficial impact on wildlife habitat. Three hundred sixty eight (368) acres would be available for disposal in the Condon and San Benito River zones. Adverse impacts in the San Benito River and Condon zones would be minor because of the relatively small size of the parcels.

4.5.5.3 Mitigation and Impacts

Mitigation measures are included in the management actions defined in Chapter 2. Potential impacts on wildlife species and their habitat from mineral and energy production, recreation, livestock grazing, wildfires, and woodcutting may be identified through Rangeland Health Monitoring. Additional mitigation measures, to be determined on a case-by-case basis, may be required to avoid, reduce, or minimize potential environmental impacts. Measures would include maintenance of watersheds and riparian areas, and use of fencing and rock barriers around sensitive area. Mitigation would include measures to use fire to improve wildlife habitat, to limit the use of fire retardant drops to prevent damage to vernal pools, to relocate man-made barriers that substantially impede migration outside of wildlife travel corridors, to reduce or rehabilitate redundant and damaging routes, and to use “no surface occupancy” stipulations.

Impacts to vegetation and wildlife habitats may be caused through sedimentation, erosion, loss of soil, crushing, habitat destruction, removal and use for fuel. The Proposed Action would have a beneficial effect, to differing degrees, upon wildlife and wildlife habitat, as altered habitat and impacted vehicle

routes and barrens are returned to the land base, creating an increase in wildlife habitat. Fragmentation of small species' habitats would be decreased as altered habitat and impacted routes become restored and illegal off route travel is curtailed. There would be a lowered potential for vehicle incursions with small animals and of harassment of all species by people through route designation and enforcement of travel on approved routes. Impacts to species found within the riparian areas are expected to decrease as restrictions on use of routes, trails and barrens increase, and by reducing the number of stream crossings and miles of routes in riparian areas. The reduction of miles of roadway and vehicle types on routes would also yield cumulative benefits, as riparian vegetation impacts are expected to diminish as erosion and sediment flows diminish. Considering estimates that nearly half the sediment delivered to streams within the CCMA come from stream and swale crossings, this reduction in the number of crossings should result in substantial reductions in sediment delivery and benefit riparian vegetation communities and sensitive species habitat. These reductions would have indirect long-term benefits due to the increased protection given to these habitats.

A key component of the long term reduction in sediment yields benefiting riparian areas is the rehabilitation and restoration of closed routes to a natural condition, so that they trend towards undisturbed soil erosion and sediment delivery rates. Closure and restoration of barrens would benefit riparian vegetation and increase the acreage of barrens which would be able to support vegetation and special status species.

Any future inventoried routes would be screened through resource evaluation criteria for the presence of known or potential sensitive resources, proximity to sensitive resources, and an analysis of potential impacts of routes from non-compliant use. Where conflicts exist with resource condition objectives and protection of sensitive resources, routes would be modified or closed. As a result, these actions would have long-term beneficial cumulative impacts to biological resources.

4.5.6 Cumulative Effects

Cumulative impacts may include unauthorized fires, livestock grazing above animal unit months, and motorized access in sensitive habitat or outside of approved routes, and non-compliance with hunting regulations. The severity of cumulative effects would depend upon the species present within the area, the existing conditions of the habitat within the surrounding area, the type of activity proposed to occur, monitoring and reclamation efforts, and existing or proposed management goals and objectives. Public education, adequate planning, mitigation, and monitoring may reduce the significance of the impacts on wildlife species and their habitat.

Impacts on wildlife would result from increasing levels of human use and development throughout the region, regardless of management actions within the Planning Area.

4.5.6.1 Cumulative Effects for Alternatives A, B, C, and D

Alternatives A, B, C, and D would contribute to enhancing the long-term protection of the sensitive habitat and special status species that occur throughout the CCMA. This would be accomplished by eliminating unregulated use, implementing Best Management Practices, completing significant road repairs and improvements, reducing the number of stream crossings and miles of routes in riparian areas by 50 percent, and reducing soil disturbing activities by reducing the number of miles of unpaved roads and substantially reducing the acres of barren play areas. Considering estimates that nearly half the sediment delivered to streams within the CCMA come from stream and swale crossings, this reduction in the number of crossings should result in substantial reductions in sediment delivery and benefit riparian vegetation communities and sensitive species habitat.

A key component of the long term reduction in sediment yields benefiting riparian areas is the rehabilitation and restoration of closed routes to a natural condition, so that they trend towards undisturbed soil erosion and sediment delivery rates. Over 150 miles of roads and trails would be closed and restored over a 5-year period. Closure and restoration of barrens would benefit riparian vegetation and increase the acreage of barrens which would be able to support vegetation and special status species. Route and barren closures in high erosion sub-watersheds, including Upper Clear Creek Canyon, south fork of Clear Creek, and Larious Canyon would contribute to reductions in sediment delivery and impacts to sensitive species habitat. A portion of R008 contributing significant amounts of sediment to the sub-watershed, riparian areas, and sensitive habitat would be closed. In addition, the designation of routes and areas and the enforcement of these designations should result in less off route travel and route proliferation.

Under Alternatives B and C, stream terraces in lower Clear Creek Canyon would continue to experience impacts related to day-use activities. Fencing and barriers protect most sensitive resources in these areas. However, the continued erosion of topsoil in high vehicle use areas would have direct long-term adverse impacts on the productive soil horizons and inhibit natural re-vegetation of some areas.

Under Alternative C and D, there would be a substantial reduction in routes and trails affecting wildlife habitat in the Serpentine ACEC compared to existing conditions. This reduction would have indirect long-term benefits due to the increased protection given to these habitats.

4.5.6.2 Cumulative Effects for Alternatives E, F, G, and the Proposed Action

Impacts to vegetation and wildlife habitats may be caused through sedimentation, erosion, loss of soil, crushing, habitat destruction, removal and use for fuel. These alternatives would have a beneficial effect, to differing degrees, upon wildlife and wildlife habitat, as altered habitat and impacted vehicle routes and barrens are returned to the land base, creating an increase in wildlife habitat. Fragmentation of small species' habitats would be decreased as altered habitat and impacted routes become restored and illegal off route travel is curtailed. There would be a lowered potential for vehicle incursions with small animals and of harassment of all species by people through route designation and enforcement of travel on approved routes. Impacts to species found within the riparian areas are expected to decrease as restrictions on use of routes, trails and barrens increase. The reduction of miles of roadway and vehicle types on routes would also yield cumulative benefits, as riparian vegetation impacts are expected to diminish as erosion and sediment flows diminish.

Any future inventoried routes will be screened through resource evaluation criteria for the presence of known or potential sensitive resources, proximity to sensitive resources, and an analysis of potential impacts of routes from non-compliant use. Where conflicts exist with resource condition objectives and protection of sensitive resources, routes would be modified or closed. As a result, none of these alternatives would have adverse cumulative impacts to biological resources.

Rather, the cumulative effects of CCMA management on biological resources under these alternatives, and the overall emphasis on limited use and improvement of biological resources would provide long-term beneficial cumulative effects.

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4.6 Biological Resources – Special Status Species

For ease of reference, the management goals from Chapter 2 are reiterated here:

- The goals for management of special status species are to (1) protect and/or improve habitat necessary to recover populations of sensitive or special status species, and (2) manage Bureau of Land Management (BLM) land to maintain, restore, or enhance populations and habitat of special status fish, wildlife, and plant species.

4.6.1 Introduction

This section describes the effects and potential impacts of implementing the Proposed Action presented in Chapter 2 on those resources identified in Chapter 3.6. Impacts to vegetation (Chapter 4.4; Biological Resources - Vegetation), wildlife habitat (Chapter 4.5; Biological Resources – Wildlife Habitat), and soils (Chapter 4.8; Soil Resources) are similar to impacts to both plant and animal special status species.

The term 'special status species' is used in this section to refer to all species listed with U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA) Fisheries, and the State of California, and to special status species listed with BLM.

The No Action alternative would continue the management direction outlined in the 1984 Hollister Resource Management Plan (RMP) as amended. The 1984 Hollister RMP does not address those species that have been listed as threatened, endangered, species of concern, or rare with the USFWS, NOAA Fisheries, or the State of California, or those that have been listed as species of concern with BLM.

Alternatives B through G and the Proposed Action would all provide added focus for improvement and protection of special status species habitat, and also provide specific management direction for the Clear Creek Management Area.

Impacts to special status plant species are strongly associated with impacts to vegetation (Chapter 4.4; Biological Resources – Vegetation; Tables 4.4-1 through 4.4-12) and soils (Chapter 4.8; Soil Resources; Tables 4.8-1 through 4.8-10). Like vegetation, special status plant species often have a high affinity for particular soil types, such as serpentine.

San Benito evening primrose, a federally-listed Threatened plant species which is a local serpentine endemic within the CCMA, is singled out and analyzed separately from all other special status plant species due to its high list status and the large number of management actions which are specific to it. The majority of San Benito evening primrose populations and potential habitat occur on two habitat types: 1) serpentine stream terraces, and 2) serpentine-nonserpentine geologic transition zones. Riparian serpentine stream terrace habitat is the primary type of habitat within the interior of the Serpentine ACEC ("serpentine riparian"). Streams that flow from inside the Serpentine ACEC to outside of the Serpentine ACEC, deposit serpentine alluvium in that zone ("nonserpentine riparian"). San Benito evening primrose populations and potential habitat have been documented to occur there. San Benito evening primrose also occurs on serpentine soils in upland geologic transition zones between serpentine and nonserpentine rock types at the Serpentine ACEC boundary ("serpentine upland"). Additionally, the species has been documented on serpentine landslides and a few shale outcrops outside of the Serpentine ACEC ("nonserpentine upland"). As a result, impacts to all four habitat groups are analyzed.

For the purpose of analysis: San Benito evening primrose is analyzed separately from all of the other special status plant species. Analysis of impacts to special status plant species is focused upon the location and intensity of the activity with respect to the general soil (serpentine or nonserpentine) and vegetation (riparian or upland) type, which provides habitat for the special status species group.

Tables 4.6-1 through Table 4.6-12 provide an overview of the management actions that would affect San Benito evening primrose and how disturbance as dictated by the alternatives would impact the species.

Tables 4.6-13 through Table 4.6-24 provide an overview of the management actions that would affect all other special status plant species and how disturbance as dictated by the alternatives would impact the species.

Table 4.6-1 Summary of San Benito evening primrose management actions for: San Benito evening primrose habitat disturbance by non-motorized recreation.

Alternative	**Impact:** San Benito evening primrose habitat disturbance by non-motorized recreation	**Management action:** Maintain habitat integrity and diversity
A **No Action**	Continued non-motorized recreation within both riparian and upland serpentine San Benito evening primrose habitat. Limited non-motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat.	Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor all populations for compliance with respect to the existing Compliance Monitoring Plan. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts.
B	Reduced non-motorized recreation within both riparian and upland serpentine San Benito evening primrose habitat. Limited non-motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat.	Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.
C	Same as Alternative B.	Same as Alternative B.
D	Further reduced non-motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine San Benito evening primrose habitat. Increased non-motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat.	Same as Alternative B.

Alternative	**Impact:** San Benito evening primrose habitat disturbance by non-motorized recreation	**Management action:** Maintain habitat integrity and diversity
E	Further reduced non-motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine San Benito evening primrose habitat. The magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat.	Same as Alternative B.
F	Same as Alternative E.	Same as Alternative B.
G	No non-motorized recreation within riparian and upland serpentine San Benito evening primrose habitat. Non-motorized recreation impacts upon nonserpentine San Benito evening primrose habitat similar to Alt. D.	Same as Alternative B.
Proposed Action	Substantially reduced non-motorized recreation) within both riparian and upland serpentine San Benito evening primrose habitat. The magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat.	Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.

Table 4.6-2 San Benito evening primrose habitat disturbance levels as predicted to change for: San Benito evening primrose habitat disturbance by non-motorized recreation.

San Benito evening primrose habitat	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↓	↓	↓↓	↓↓↓	↓↓↓	↓↓↓
Serpentine upland	↔	↓	↓	↓↓	↓↓	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↑↑↑	↑	↑	↑
Nonserpentine upland	↔	↔	↔	↑↑↑	↑	↑	↑
Predicted habitat disturbance →	A >	B ~	C ~	D >	E >	F ~	G

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse), Predicted habitat disturbance within the CCMA based upon Alternatives: A>B~C>D>E~F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as: B is approximately equal to C.

Table 4.6-3 Summary of San Benito evening primrose management actions for: San Benito evening primrose habitat disturbance by motorized recreation.

Alternative	**Impact:** San Benito evening primrose habitat disturbance by motorized recreation	**Management action:** Maintain habitat integrity and diversity
A **No Action**	Continued intensive motorized recreation within both riparian and upland serpentine San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat.	Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor all populations for compliance with respect to the existing Compliance Monitoring Plan. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts.
B	Reduced motorized recreation within both riparian and upland serpentine San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat.	Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.
C	Same as Alternative B.	Same as Alternative B.
D	Further reduced motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine San Benito evening primrose habitat. Greatly increased motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat.	Same as Alternative B.
E	Further reduced motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine San Benito evening primrose habitat. Magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat.	Same as Alternative B.
F	No motorized recreation within riparian and upland serpentine San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland San Benito evening primrose habitat.	Same as Alternative B.

Alternative	**Impact:** San Benito evening primrose habitat disturbance by motorized recreation	**Management action:** Maintain habitat integrity and diversity
G	No motorized recreation within riparian and upland serpentine San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat.	Same as Alternative B.
Proposed Action	Substantially reduced motorized recreation within both riparian and upland serpentine San Benito evening primrose habitat. Magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat.	Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.

Table 4.6-4 San Benito evening primrose habitat disturbance levels as predicted to change for: San Benito evening primrose habitat disturbance by motorized recreation .

San Benito evening primrose habitat	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↓	↓	↓↓	↓↓↓	↓↓↓	↓↓↓
Serpentine upland	↔	↓	↓	↓↓	↓↓	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↑↑↑	↑	↑	↑
Nonserpentine upland	↔	↔	↔	↑↑↑	↑	↑	↑
Predicted habitat disturbance →	A >	B ~	C ~	D >	E >	F ~	G

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse), Predicted habitat disturbance within the CCMA based upon Alternatives: A>B~C>D>E~F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as: B is

Table 4.6-5 Summary of San Benito evening primrose management actions for: San Benito evening primrose habitat disturbance by energy and mineral exploration.

Alternative	**Impact:** San Benito evening primrose habitat disturbance by energy and mineral exploration	**Management action:** Maintain habitat integrity and diversity
A **No Action**	Continued energy and mineral exploration within both riparian and upland San Benito evening primrose habitat of serpentine and nonserpentine areas.	Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor all populations for compliance with respect to the existing Compliance Monitoring Plan. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts.
B	Same as Alternative A.	Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.
C	Same as Alternative A.	Same as Alternative B.
D	Same as Alternative A.	Same as Alternative B.
E	Energy and mineral exploration limited to both riparian and upland nonserpentine San Benito evening primrose habitat outside of the ACEC.	Same as Alternative B.
F	Same as Alternative E.	Same as Alternative B.
G	Same as Alternative E.	Same as Alternative B.
Proposed Action	Energy and mineral exploration limited to both riparian and upland nonserpentine San Benito evening primrose habitat outside of the ACEC.	Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.

Table 4.6-6 San Benito evening primrose habitat disturbance levels as predicted to change for: San Benito evening primrose habitat disturbance by energy and mineral exploration.

San Benito evening primrose habitat	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↔	↔	↔	↓↓↓	↓↓↓	↓↓↓
Serpentine upland	↔	↔	↔	↔	↓↓↓	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↔	↔	↔	↔
Nonserpentine upland	↔	↔	↔	↔	↔	↔	↔
Predicted habitat disturbance →	A ~	B ~	C ~	D >	E ~	F ~	G

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted habitat disturbance within the CCMA based upon Alternatives: A~B~C~D>E~F~G. "A~B" reads as A is approximately equal to B. "D> E" reads as: D is greater than E, or E is less than D.

Table 4.6-7 Summary of San Benito evening primrose management actions for: Noxious weed invasion.

Alternative	**Impact:** Noxious weed invasion	**Management action:** Maintain habitat integrity and diversity
A **No Action**	Continued movement of weed seed on vehicles from both riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. Continued movement of weed seed on livestock from both riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat.	Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor all populations for compliance with respect to the existing Compliance Monitoring Plan. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts.
B	Reduced movement of weed seed on vehicles from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat.	Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.

Alternative	**Impact:** Noxious weed invasion	**Management action:** Maintain habitat integrity and diversity
C	Same as Alternative B.	Same as Alternative B.
D	Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. Greatly increased movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities and San Benito evening primrose habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat	Same as Alternative B.
E	Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. Limited movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities and San Benito evening primrose habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat.	Same as Alternative B.
F	No movement of weed seed on vehicles from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. Limited movement of weed seed on vehicles within riparian and upland nonserpentine plant communities and San Benito evening primrose habitat. Weed seed movement on livestock limited to only within riparian and upland nonserpentine plant communities and San Benito evening primrose habitat (outside of the ACEC).	Same as Alternative B.

Alternative	**Impact:** Noxious weed invasion	**Management action:** Maintain habitat integrity and diversity
G	No movement of weed seed on vehicles from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. Limited movement of weed seed on vehicles within riparian and upland nonserpentine plant communities and San Benito evening primrose habitat. No weed seed movement on livestock within the CCMA.	Same as Alternative B.
Proposed Action	Substantially reduced movement of weed seed on vehicles from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. Limited movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities and San Benito evening primrose habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat.	Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.

Table 4.6-8 San Benito evening primrose habitat disturbance levels as predicted to change for: Noxious weed invasion.

San Benito evening primrose habitat	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↓	↓	↓↓	↓↓↓	↓↓↓	↓↓↓
Serpentine upland	↔	↓	↓	↓↓	↓↓	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↑↑↑	↑	↑	↑
Nonserpentine upland	↔	↔	↔	↑↑↑	↑	↑	↑
Predicted habitat disturbance →	A >	B ~	C ~	D >	E >	F ~	G

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse). Predicted vegetation loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as B is approximately equal to C.

Table 4.6-9 Summary of San Benito evening primrose management actions for: Livestock grazing.

Alternative	**Impact:** Livestock grazing	**Management action:** Maintain habitat integrity and diversity
A **No Action**	Continued grazing within riparian and upland serpentine plant communities and San Benito evening primrose habitat and riparian and upland nonserpentine plant communities and San Benito evening primrose habitat.	Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor all populations for compliance with respect to the existing Compliance Monitoring Plan. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts.
B	Same as Alternative A	Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.
C	Same as Alternative A.	Same as Alternative B.
D	Same as Alternative A	Same as Alternative B.
E	Same as Alternative A	Same as Alternative B.
F	Livestock grazing limited to uplands and nonserpentine plant communities outside of the Serpentine ACEC.	Same as Alternative B.
G	No livestock grazing within the CCMA.	Same as Alternative B.
Proposed Action	Same as Alternative A.	Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.

Table 4.6-10 San Benito evening primrose habitat disturbance levels as predicted to change for: Livestock grazing.

San Benito evening primrose habitat	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↔	↔	↔	↔	↓↓↓	↓↓↓
Serpentine upland	↔	↔	↔	↔	↔	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↔	↔	↔	↓↓↓
Nonserpentine upland	↔	↔	↔	↔	↔	↔	↓↓↓
Predicted habitat disturbance →	A ~	B ~	C ~	D ~	E >	F >	G

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D~E~F>G. "A~B" reads as A is approximately equal to B. "F> G" reads as: F is greater than G, or G is less than F.

Table 4.6-11 Summary of San Benito evening primrose management actions for: Plant community restoration and fire management.

Alternative	**Impact:** Plant community restoration and fire management	**Management action:** Maintain habitat integrity and diversity
A **No Action**	Continued plant community restoration within disturbed riparian and upland serpentine plant communities and San Benito evening primrose habitat and disturbed riparian and upland nonserpentine plant communities and San Benito evening primrose habitat. Utilization of control burns for fuels reduction and habitat improvement.	Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor all populations for compliance with respect to the existing Compliance Monitoring Plan. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts.
B	Same as Alternative A.	Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.
C	Same as Alternative A.	Same as Alternative B.
D	Same as Alternative A.	Same as Alternative B.
E	Same as Alternative A.	Same as Alternative B.

Alternative	**Impact:** Plant community restoration and fire management	**Management action:** Maintain habitat integrity and diversity
F	Same as Alternative A.	Same as Alternative B.
G	Same as Alternative A.	Same as Alternative B.
Proposed Action	Same as Alternative A.	Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.

Table 4.6-12 Type of effects on San Benito evening primrose habitat as predicted to change for: Impacts to San Benito evening primrose habitat from plant community restoration and fire management.

San Benito evening primrose habitat	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↔	↔	↔	↔	↔	↔
Serpentine upland	↔	↔	↔	↔	↔	↔	↔
Nonserpentine riparian	↔	↔	↔	↔	↔	↔	↔
Nonserpentine upland	↔	↔	↔	↔	↔	↔	↔
Predicted habitat disturbance →	A ~	B ~	C ~	D ~	E ~	F ~	G

↔ = no change (existing condition). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D~E~F~G. "A~B" reads as: A is approximately equal to B.

Table 4.6-13 Summary of special status plant species management actions for: Special status plant species habitat disturbance by non-motorized recreation.

Alternative	**Impact:** Special status plant species habitat disturbance by non-motorized recreation	**Management action:** Maintain habitat integrity and diversity
A **No Action**	Continued non-motorized recreation within both riparian and upland serpentine special status plant species habitat. Limited non-motorized recreation within both riparian and upland nonserpentine special status plant species habitat.	Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor the effects of management activities on significant habitat areas. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts.
B	Reduced non-motorized recreation within both riparian and upland serpentine special status plant species habitat. Limited non-motorized recreation within both riparian and upland nonserpentine special status plant species habitat.	Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.
C	Same as Alternative B.	Same as Alternative B.
D	Further reduced non-motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine special status plant species habitat. Increased non-motorized recreation within both riparian and upland nonserpentine special status plant species habitat.	Same as Alternative B.
E	Further reduced non-motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine special status plant species habitat. The magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian special status plant species habitat than serpentine upland special status plant species habitat. Limited motorized recreation within both riparian and upland nonserpentine special status plant species habitat.	Same as Alternative B.
F	Same as Alternative E.	Same as Alternative B.
G	No non-motorized recreation within riparian and upland serpentine special status plant species habitat. Non-motorized recreation impacts upon nonserpentine special status plant species habitat similar to Alt. D.	Same as Alternative B.

Alternative	**Impact:** Special status plant species habitat disturbance by non-motorized recreation	**Management action:** Maintain habitat integrity and diversity
Proposed Action	Substantially reduced non-motorized recreation within both riparian and upland serpentine special status plant species habitat. The magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian special status plant species habitat than serpentine upland special status plant species habitat. Limited motorized recreation within both riparian and upland nonserpentine special status plant species habitat.	Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.

Table 4.6-14 Special status plant species habitat disturbance levels as predicted to change for: Special status plant species habitat disturbance by non-motorized recreation.

Special status plant species habitat	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↓	↓	↓↓	↓↓↓	↓↓↓	↓↓↓
Serpentine upland	↔	↓	↓	↓↓	↓↓	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↑↑↑	↑	↑	↑
Nonserpentine upland	↔	↔	↔	↑↑↑	↑	↑	↑
Predicted habitat disturbance →	A >	B ~	C ~	D >	E >	F ~	G

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse). Predicted habitat disturbance within the CCMA based upon Alternatives: A>B~C>D>E~F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as: B is approximately equal to C.

Table 4.6-15 Summary of special status plant species management Actions for: Special status plant species habitat disturbance by motorized recreation.

Alternative	**Impact:** Special status plant species habitat disturbance by motorized recreation	**Management action:** Maintain habitat integrity and diversity
A **No Action**	Continued intensive motorized recreation within both riparian and upland serpentine special status plant species habitat. Limited motorized recreation within both riparian and upland special status plant species habitat.	Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor the effects of management activities on significant habitat areas. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts.
B	Reduced motorized recreation within both riparian and upland serpentine special status plant species habitat. Limited motorized recreation within both riparian and upland nonserpentine special status plant species habitat.	Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.
C	Same as Alternative B.	Same as Alternative B.
D	Further reduced motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine special status plant species habitat. Greatly increased motorized recreation within both riparian and upland nonserpentine special status plant species habitat.	Same as Alternative B.
E	Further reduced motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine special status plant species habitat. Magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland special status plant species habitat. Limited motorized recreation within both riparian and upland nonserpentine special status plant species habitat.	Same as Alternative B.
F	No motorized recreation within riparian and upland serpentine special status plant species habitat. Limited motorized recreation within both riparian and upland special status plant species habitat.	Same as Alternative B.

Alternative	**Impact:** Special status plant species habitat disturbance by motorized recreation	**Management action:** Maintain habitat integrity and diversity
G	No motorized recreation within riparian and upland serpentine special status plant species habitat. Limited motorized recreation within both riparian and upland nonserpentine special status plant species habitat.	Same as Alternative B.
Proposed Action	Substantially reduced motorized recreation within both riparian and upland serpentine special status plant species habitat. Magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland special status plant species habitat. Limited motorized recreation within both riparian and upland nonserpentine special status plant species habitat.	Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.

Table 4.6-16 Special status plant species habitat disturbance levels as predicted to change for: Special status plant species habitat disturbance by motorized recreation.

Special status plant species habitat	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↓	↓	↓↓	↓↓↓	↓↓↓	↓↓↓
Serpentine upland	↔	↓	↓	↓↓	↓↓	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↑↑↑	↑	↑	↑
Nonserpentine upland	↔	↔	↔	↑↑↑	↑	↑	↑
Predicted habitat disturbance →	A >	B ~	C ~	D >	E >	F ~	G

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse). Predicted habitat disturbance within the CCMA based upon Alternatives: A>B~C>D>E~F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as: B is approximately equal to C.

Table 4.6-17 Summary of special status plant species management actions for: Special status plant species habitat disturbance by energy and mineral exploration.

Alternative	**Impact:** Special status plant species habitat disturbance by energy and mineral exploration	**Management action:** Maintain habitat integrity and diversity
A **No Action**	Continued energy and mineral exploration within both riparian and upland special status plant habitat of serpentine and nonserpentine areas.	Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor the effects of management activities on significant habitat areas. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts.
B	Same as Alternative A.	Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.
C	Same as Alternative A.	Same as Alternative B.
D	Same as Alternative A.	Same as Alternative B.
E	Energy and mineral exploration limited to both riparian and upland nonserpentine special status plant species habitat outside of the ACEC.	Same as Alternative B.
F	Same as Alternative E.	Same as Alternative B.
G	Same as Alternative E.	Same as Alternative B.
Proposed Action	Energy and mineral exploration limited to both riparian and upland nonserpentine special status plant species habitat outside of the ACEC.	Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.

Table 4.6-18 Special status plant species habitat disturbance levels as predicted to change for: Special status plant species habitat disturbance by energy and mineral exploration.

Special status plant species habitat	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↔	↔	↔	↓↓↓	↓↓↓	↓↓↓
Serpentine upland	↔	↔	↔	↔	↓↓↓	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↔	↔	↔	↔
Nonserpentine upland	↔	↔	↔	↔	↔	↔	↔
Predicted habitat disturbance →	A ~	B ~	C ~	D >	E ~	F ~	G

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted habitat disturbance within the CCMA based upon Alternatives: A~B~C~D>E~F~G. "A~B" reads as A is approximately equal to B. "D> E" reads as: D is greater than E, or E is less than D.

Table 4.6-19 Summary of special status plant species management actions for: Noxious weed invasion.

Alternative	**Impact:** Noxious weed invasion	**Management action:** Maintain habitat integrity and diversity
A **No Action**	Continued movement of weed seed on vehicles from both riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. Continued movement of weed seed on livestock from both riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat.	Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor the effects of management activities on significant habitat areas. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts.
B	Reduced movement of weed seed on vehicles from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat.	Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.
C	Same as Alternative B.	Same as Alternative B.

Alternative	**Impact:** Noxious weed invasion	**Management action:** Maintain habitat integrity and diversity
D	Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. Greatly increased movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities and special status plant species habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat	Same as Alternative B.
E	Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. Limited movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities and special status plant species habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat.	Same as Alternative B.
F	No movement of weed seed on vehicles from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. Limited movement of weed seed on vehicles within riparian and upland nonserpentine plant communities and special status plant species habitat. Weed seed movement on livestock limited to only within riparian and upland nonserpentine plant communities and special status plant species habitat outside of the ACEC.	Same as Alternative B.

Alternative	**Impact:** Noxious weed invasion	**Management action:** Maintain habitat integrity and diversity
G	No movement of weed seed on vehicles from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. Limited movement of weed seed on vehicles within riparian and upland nonserpentine plant communities and special status plant species habitat. No weed seed movement on livestock within the CCMA.	Same as Alternative B.
Proposed Action	Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. Limited movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities and special status plant species habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat.	Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.

Table 4.6-20 Special status plant species habitat disturbance levels as predicted to change for: Noxious weed invasion.

Special status plant species habitat	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↓	↓	↓↓	↓↓↓	↓↓↓	↓↓↓
Serpentine upland	↔	↓	↓	↓↓	↓↓	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↑↑↑	↑	↑	↑
Nonserpentine upland	↔	↔	↔	↑↑↑	↑	↑	↑
Predicted habitat disturbance →	A >	B ~	C ~	D >	E >	F ~	G

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse). Predicted vegetation loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as: B is approximately equal to C.

Table 4.6-21 Summary of special status plant species management actions for: Livestock grazing.

Alternative	**Impact:** Livestock grazing	**Management action:** Maintain habitat integrity and diversity
A **No Action**	Continued grazing within riparian and upland serpentine plant communities and special status plant species habitat and riparian and upland nonserpentine plant communities and special status plant species habitat.	Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor the effects of management activities on significant habitat areas. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts.
B	Same as Alternative A	Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.
C	Same as Alternative A.	Same as Alternative B.
D	Same as Alternative A	Same as Alternative B.
E	Same as Alternative A	Same as Alternative B.
F	Livestock grazing limited to uplands and nonserpentine plant communities outside of the Serpentine ACEC.	Same as Alternative B.
G	No livestock grazing within the CCMA.	Same as Alternative B.
Proposed Action	Livestock grazing limited to uplands and nonserpentine plant communities outside of the Serpentine ACEC.	Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.

Table 4.6-22 Special status plant species habitat disturbance levels as predicted to change for: Livestock grazing.

Special status plant species habitat	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↔	↔	↔	↔	↓↓↓	↓↓↓
Serpentine upland	↔	↔	↔	↔	↔	↓↓↓	↓↓↓
Nonserpentine riparian	↔	↔	↔	↔	↔	↔	↓↓↓
Nonserpentine upland	↔	↔	↔	↔	↔	↔	↓↓↓
Predicted habitat disturbance →	A ~	B ~	C ~	D ~	E >	F >	G

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D~E~F>G. "A~B" reads as A is approximately equal to B. "F> G" reads as: F is greater than G, or G is less than F.

Table 4.6-23 Summary of special status plant species management actions for: Plant community restoration and fire management.

Alternative	**Impact:** Plant community restoration and fire management	**Management action:** Maintain habitat integrity and diversity
A	Continued plant community restoration within disturbed riparian and upland serpentine plant communities and special status plant species habitat and disturbed riparian and upland nonserpentine plant communities and special status plant species habitat. Utilization of control burns for fuels reduction and habitat improvement.	Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor the effects of management activities on significant habitat areas. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts.
B – G	Same as Alternative A.	Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices.
Proposed Action	Same as Alternative A.	Same as Alternative B - G

Table 4.6-24 Special status plant species habitat disturbance levels as predicted to change for: Plant community restoration and fire management.

Special status plant species habitat	Alternative						
	A	B	C	D	E	F	G
Serpentine riparian	↔	↔	↔	↔	↔	↔	↔
Serpentine upland	↔	↔	↔	↔	↔	↔	↔
Nonserpentine riparian	↔	↔	↔	↔	↔	↔	↔
Nonserpentine upland	↔	↔	↔	↔	↔	↔	↔
Predicted habitat disturbance →	A ~	B ~	C ~	D ~	E ~	F ~	G

↔ = no change (existing condition). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D~E~F~G. "A~B" reads as: A is approximately equal to B.

4.6.2 Overview of Impacts to Special Status Plant Species

Impacts to special status plant species and their habitat would be similar to those impacts discussed in Section(s) 4.4 (Biological Resources – Vegetation) and 4.8 (Soil Resources). Impacts would vary depending upon the type of disturbance, location within the landscape, seasonal timing, and duration. Generally, the management actions for special status plant species aim to maintain or improve habitat and reduce potential impacts to special status species.

Impacts to special status plant species from management actions include direct mortality, direct habitat loss, habitat fragmentation, and habitat modification. Impacts would vary depending upon the type of surface disturbance and location within the landscape. Activities within the Planning Area that may cause adverse impacts include: Vehicle travel, energy and mineral exploration, noxious weed invasion, plant collection, livestock grazing, and fire management. Beneficial impacts may be provided by restoration and fire management, when conducted under controlled conditions (i.e. fuels reduction to improve special status species habitat).

BLM has established procedures and policies that assess the effects of existing and proposed projects on BLM-managed lands. BLM would be responsible for analyzing potential impacts to ensure that activities do not cause significant adverse effects on special status species habitat. BLM would be responsible for analyzing potential impacts to ensure that no significant adverse effects would occur to sensitive species habitat. In addition, BLM would consult with USFWS and NOAA Fisheries in accordance with Section 7 of the Endangered Species Act (ESA).

4.6.2.1 Special Status Plant Species and Disturbance by Non-motorized Recreation

Non-motorized recreation activities including camping, hiking, hunting, and rockhounding can cause adverse impacts to special status plant species and their habitat. Of these activities, camping poses the greatest impact to vegetation resources since camping sites are repeatedly used. Repeated use of campsites can result in localized vegetation damage and removal and soil compaction and erosion (adverse). This is particularly true for serpentine riparian habitat within the ACEC. The many level stream terraces adjacent to Clear Creek and other riparian areas within the CCMA were heavily used historically as OHV staging areas and camp sites. Most of the terraces are occupied and potential habitat for San Benito evening primrose. Although most of those terraces are now closed, some stream terraces remain open and continue to be used as campsites. Most campsites with the CCMA are located at

designated campgrounds and staging areas, however, there are several small, popular informal campsites scattered throughout the CCMA. Foot traffic activities such as hiking, hunting, and rockhounding tend to be dispersed and not result in measurable adverse impacts to special status plant species. Most hiking and hunting activities tend to occur primarily outside of the ACEC which are more vegetated and support more game animals, whereas most rockhounding activities are focused within the ACEC where there is a wide variety of rare minerals that appeal to collectors.

4.6.2.2 Special Status Plant Species and Disturbance by Motorized Recreation

OHV recreation activities and motorized vehicle access for recreation can cause direct removal of special status plants and/or damage their habitat (adverse). Habitat disturbance including vegetation removal exposes soil and accelerates erosion (adverse). Currently, the majority of OHV activities within the CCMA are located within the serpentine Area of Critical Environmental Concern (ACEC). Many special status plant species within the CCMA, including the San Benito evening primrose and rayless layia, are local serpentine endemics. Due to the stressful conditions imposed by serpentine soils, habitat within the ACEC is sparsely vegetated and very slow to recover following disturbance. Given the very limited distribution of some of the serpentine endemic species at the CCMA including San Benito evening primrose and rayless layia, even small impacts to their limited habitat can have large, adverse impacts to the species as a whole. Motorized recreation impacts to special status species and their habitat have been reduced by the CCMA route designation (2006) and fencing closed areas.

4.6.2.3 Special Status Plant Species and Disturbance by Energy and Mineral Exploration

Like vehicle travel impacts, construction can cause direct removal of special status plant species and/or damage their habitat (adverse). Habitat disturbance from construction is typically more intense compared to OHV (light vehicle) impacts due to the use of heavy equipment. As discussed in more detail in Section 4.4, the CCMA has moderate potential for mineral and energy development. Although the Serpentine ACEC was mined historically for metal ores and minerals, which adversely impacted special status plant species habitat, most mining has since ceased due to the depletion of near-surface marketable minerals and changing mineral markets and mineral regulation (i.e. asbestos ban in U.S.). Oil and gas development potential is very low as the New Idria serpentine mass (ACEC) which comprises 40% of the CCMA land area has no potential for fossil fuel resources. The remainder of the CCMA contains sedimentary formations which have not yielded significant oil and gas resources within the local area. Wind energy development has some potential as the CCMA contains some of the highest points in the Diablo Range. The BLM would be responsible for analyzing potential impacts from energy and mineral development impacts to ensure that activities do not cause significant adverse effects to special status species and their habitat.

4.6.2.4 Special Status Plant Species and Disturbance by Noxious Weed Invasion

Noxious and invasive weeds can invade special status plant species habitat and compete with special status plant species for light, space, water, and nutrients (adverse). Invasive weed species may also increase the risk of wildfire because they are typically composed of fine fuels and become flammable as they age (adverse). An integrated pest management (IPM) approach is utilized to control weeds within special status plant species habitat (i.e. yellow starthistle control within San Benito evening primrose habitat). The IPM includes prescribed fire, mechanical, chemical, and biological treatments, and public outreach in order to reduce the spread of noxious, invasive weeds. The IPM is discussed in more detail in Section 4.4 (Biological Resources – Vegetation).

4.6.2.5 Special Status Plant Species and Disturbance by Livestock Grazing

Livestock grazing has the potential to affect special status plant species in the 14 grazing allotments located at least partially within the CCMA. Inappropriate livestock management may result in overgrazing which may directly remove special status plant species and/or adversely impact special status plant species habitat (adverse). Livestock grazing, however, can also benefit special status plant species by reducing competing native and invasive plant species (beneficial).

4.6.2.6 Special Status Plant Species and Disturbance by Plant Community Restoration and Fire Management

Vegetation restoration is an important tool for restoring or improving function of degraded ecosystems (beneficial). Restoration has many different levels based on the initial condition of the ecosystem and the desired final condition of the ecosystem. Restoration of drastically-disturbed lands, such as mines and serpentine barrens may include erosion control and/or revegetation with native plant species which typically requires intensive soil amendment. Restoration of lands invaded by noxious, invasive species typically includes eradication of the invasive species, followed by establishment of native vegetation. The IPM plan for some noxious, invasive species includes prescribed fire. Restoration of climax plant communities such as decadent chaparral also involves prescribed fire. Although initial short-term restoration impacts may be detrimental to the ecosystem, the overall long-term effects are beneficial. Plant community restoration and fire management impacts are discussed in more detail in Section 4.4 (Biological Resources – Vegetation).

4.6.3 Impacts and Mitigation for Alternative A

4.6.3.1 Habitat Disturbance by Non-motorized Recreation

Under Alternative A, non-motorized recreation will continue both within and outside of the ACEC. Camping impacts will continue to be the greatest within the ACEC, as associated with OHV user camping. As a result, San Benito evening primrose habitat and other special status plant species serpentine riparian and upland habitat, which generally has sparse vegetative cover and is slow to recover from disturbance, will continue to be disturbed. Nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat will also continue to be disturbed by non-motorized recreation.

4.6.3.2 Habitat Disturbance by Motorized Recreation

Under Alternative A, both highway-licensed and green sticker vehicle recreation and its impacts will continue to be concentrated within the ACEC. Impacts outside of the ACEC will continue to be minor as few designated open routes exist outside of the ACEC. As a result, San Benito evening primrose and other special status plant species serpentine riparian and upland habitat, which generally has sparse vegetative cover and is slow to recover from disturbance, will continue to be disturbed. Nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat will also continue to be disturbed by motorized recreation. Vehicle disturbance will continue to result in habitat disturbance and vegetation loss, resulting in accelerated erosion rates and sedimentation of local watersheds.

Alternative A includes special status plant species monitoring in order to prevent sharp declines in plant numbers and adverse impacts to occupied and potential habitat. Sensitive habitat upland and riparian habitat is protected.

4.6.3.3 Habitat Disturbance by Energy and Mineral Exploration

Under Alternative A, energy and mineral exploration will continue both within and outside of the ACEC. Serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat as well as nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat will continue to be disturbed.

Alternative A includes special status plant species monitoring in order to prevent sharp declines in plant numbers and adverse impacts to occupied and potential habitat. Sensitive habitat upland and riparian habitat is protected.

4.6.3.4 Noxious Weed Invasion

Under Alternative A, there will continue to movement of weed seed on vehicles and livestock from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat within the ACEC.

Alternative A does not implicitly specify management actions for controlling noxious weeds within San Benito evening primrose or other special status plant species habitat, however, rehabilitation of special status species potential habitat and performing habitat vegetation manipulations within that potential habitat would include the control of noxious weeds as a form of habitat rehabilitation and vegetation manipulation. The control of noxious weed species is typically employed at the plant community level and as such, is addressed by Alternative B in Section 4.4 (Biological Resources – Vegetation).

4.6.3.5 Livestock Grazing

Under Alternative A, livestock grazing will continue to be permitted within and outside of the ACEC, resulting in impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat, as well as nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat.

Alternative A includes special status plant species monitoring in order to prevent sharp declines in plant numbers and adverse impacts to occupied and potential habitat.

4.6.3.6 Plant Community Restoration and Fire Management

Under Alternative A, restoration of San Benito evening primrose habitat and other special status plant species habitat will continue within and outside of the ACEC, resulting in impacts to serpentine riparian and upland and nonserpentine riparian and upland special status species habitat. Control burns will continue to be used for fuels reduction and habitat improvement.

Alternative A includes restoration of special status plant species habitat and utilization of control burns, which would have moderate long-term beneficial impacts on CCMA resources.

4.6.3.7 Mitigation

Alternative A includes management actions and mitigation measures to prevent excessive vegetation loss including vegetation compliance monitoring. These mitigation measures would have moderate long-term beneficial impacts on these resources.

4.6.4 Impacts and Mitigation for Alternative B

4.6.4.1 Habitat Disturbance by Non-motorized Recreation

Under Alternative B, non-motorized recreation will continue both within and outside of the ACEC. Visitor use within the ACEC will be limited to ≤ 12 days. Camping impacts will continue to be the greatest within the ACEC, as associated with OHV user camping, but will be reduced relative to Alternative A due to visitor use limitations. As a result, there would be a minor decrease (beneficial) of non-motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat as compared to Alternative A. Non-motorized recreation location and intensity outside of the ACEC would be unchanged and therefore non-motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat would be unchanged compared to Alternative A

Mitigation or relocation of proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.

4.6.4.2 Habitat Disturbance by Motorized Recreation

Under Alternative B, motorized recreation of each visitor within the ACEC would be limited to a certain number of days per year (based upon asbestos exposure limits) and vehicle use would be restricted to outside of the proposed Dry Season Use Restriction period of April 15th through December 1st (extended 45 days compared to the current Dry Season Use Restriction period). As a result, motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC would be reduced compared to Alternative A. Motorized recreation location and intensity outside of the ACEC would be unchanged and therefore motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat outside of the ACEC would be unchanged compared to Alternative A.

4.6.4.3 Habitat Disturbance by Energy and Mineral Exploration

Same as Alternative A.

4.6.4.4 Noxious Weed Invasion

Under Alternative B, there would be reduced, but continued movement of weed seed on vehicles (as compared to Alternative A) from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat within the ACEC, coincident with greater restrictions in vehicle use. As a result, there would be less exotic species invasion into nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC (beneficial). There would be continued movement of weed seed on livestock from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat within the ACEC.

4.6.4.5 Livestock Grazing

Same as Alternative A.

4.6.4.6 Plant Community Restoration and Fire Management

Same as Alternative A.

4.6.4.7 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives A, B, C, and D, including the CABE Monitoring Plan outlined in Appendix IV. These mitigation measures and others incorporated into vegetation resource management actions would all have moderate long-term beneficial impacts on biological resources in CCMA.

4.6.5 Impacts and Mitigation for Alternative C

4.6.5.1 Habitat Disturbance by Non-motorized Recreation

Non-motorized recreation impacts for Alternative C would be similar to those for Alternative B with visitor use restrictions. As a result, non-motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat and nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat would be unchanged as compared to Alternative B.

4.6.5.2 Habitat Disturbance by Motorized Recreation

Impacts for Alternative C would be similar to those for Alternative B. Motorized recreation would be subject to the same restrictions as Alternative B with the added restriction of only highway-licensed vehicles being permitted on county roads and the dry season route network and green-sticker motorcycle use being permitted only on single track trails. This is the same general use pattern for vehicles on routes (full-sized vehicles on roads; motorcycles on single-track trails) that currently exists, so the level of motorized recreation impact to serpentine riparian and upland plant San Benito evening primrose habitat and other special status plant species habitat would be expected to be about the same as Alternative B. Like Alternative B, motorized recreation location and intensity outside of the ACEC would be unchanged and therefore motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat outside of the ACEC would be unchanged.

4.6.5.3 Habitat Disturbance by Energy and Mineral Exploration

Same as Alternative A.

4.6.5.4 Noxious Weed Invasion

Same as Alternative B.

4.6.5.5 Livestock Grazing

Same as Alternative A.

4.6.5.6 Plant Community Restoration and Fire Management

Same as Alternative A.

4.6.5.7 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives A, B, C, and D, including the CABE Monitoring Plan outlined in Appendix IV. These mitigation measures and others incorporated into vegetation resource management actions would all have moderate long-term beneficial impacts on biological resources in CCMA.

4.6.6 Impacts and Mitigation for Alternative D

4.6.6.1 Habitat Disturbance by Non-motorized Recreation

Alternative D represents a major shift in non-motorized recreation activities from inside to outside of the ACEC as new staging areas and campgrounds are established outside of the ACEC. With increased motorized recreation staging outside of the ACEC, there will be a major increase (adverse) in OHV users camping outside of the ACEC. Likewise, improved access to hunting areas and improved camping opportunities outside of the ACEC will likely encourage more hunters to camp in those areas outside of the ACEC as well. As a result, there would be an even greater reduction (beneficial) of the disturbance of serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC as compared to Alternative C and a major increase (adverse) of the disturbance of nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat plant outside of the ACEC as compared to Alternative C.

4.6.6.2 Habitat Disturbance by Motorized Recreation

Alternative D represents a major shift in the location of motorized recreation from inside to outside of the ACEC. Under Alternative D, motorized recreation within the ACEC would be restricted to only highway-licensed vehicles on county roads and the dry season route network. All green sticker vehicle recreation would be relocated to outside of the ACEC. New staging areas and routes would be constructed through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River Zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for both motorized and non-motorized recreation. The result would be an even greater reduction (beneficial) of motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and special status plant species habitat within the ACEC as compared to Alternative C, and a major increase (adverse) of motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat outside of the ACEC as compared to Alternative C.

4.6.6.3 Habitat Disturbance by Energy and Mineral Exploration

Same as Alternative A.

4.6.6.4 Noxious Weed Invasion

Under Alternative D, there would be a further reduced (beneficial), but continued movement of weed seed on vehicles (relative to Alternatives B and C) from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat, coincident with even greater vehicle use restrictions within the ACEC. As a result, there would be even less exotic species invasion into serpentine riparian and upland San Benito evening primrose habitat and

other special status plant species habitat within the ACEC (beneficial). There would likely be greatly increased (adverse) movement of weed seed on vehicles used within nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC, coincident with greater anticipated vehicle use in those areas. Under Alternative D, there would be continued movement of weed seed on humans (foot traffic) and livestock from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status species habitat within the ACEC.

4.6.6.5 Livestock Grazing

Same as Alternative A.

4.6.6.6 Plant Community Restoration and Fire Management

Same as Alternative A.

4.6.6.7 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives A, B, C, and D, including the CABE Monitoring Plan outlined in Appendix IV. These mitigation measures and others incorporated into vegetation resource management actions would all have moderate long-term beneficial impacts on biological resources in CCMA.

4.6.7 Impacts and Mitigation for Alternative E

4.6.7.1 Habitat Disturbance by Non-motorized Recreation

Non-motorized recreation under Alternative E would be further reduced as visitor use continued to be limited within the ACEC and less new routes are constructed outside of the ACEC as compared to Alternative D. Camping impacts would be reduced as compared to Alternative D as it is expected that there would be fewer OHV users and hunters. Under Alternative E, non-motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC would be similar to Alternative D. Non-motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and special status plant species habitat outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

4.6.7.2 Habitat Disturbance by Vehicle Use

Under Alternative E, motorized recreation within the ACEC would be similar to Alternative D with highway-licensed vehicles restricted to a scenic route network composed of T153 and R11 south of its intersection with T153. T153 and R11 south of its intersection with T153 primarily follow hill slopes some distance from streams (except for at upper Sawmill Creek). Motorized recreation outside of the ACEC would be slightly increased (adverse) as compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River Zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Due to the closure of R1, R11 north of the intersection with T153, and R15, which parallel and impact perennial streams within the ACEC, motorized recreation impacts to serpentine

riparian San Benito evening primrose habitat and other special status plant species habitat within the ACEC would be reduced (beneficial) as compared to Alternative D and reduced even more than impacts to serpentine upland San Benito evening primrose habitat and other special status plant species habitat. Since vegetation impacts from the construction of the new routes outside of the ACEC are expected to be short term, and vegetation impacts from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

4.6.7.3 Habitat Disturbance by Energy and Mineral Exploration

Under Alternative E, energy and mineral exploration would only be permitted outside of the ACEC. As a result, impacts to serpentine upland and riparian San Benito evening primrose and other special status plant species habitat within the ACEC from energy and mineral exploration would cease (beneficial). Energy and mineral exploration impacts to nonserpentine riparian and upland San Benito evening primrose and other special status plant species habitat outside of the ACEC would continue.

4.6.7.4 Noxious Weed Invasion

Under Alternative E, movement of weed seed on vehicles from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat within the ACEC would be similar to Alternative D. Movement of weed seed on vehicles within nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC would be limited. Under Alternative E, there would be continued movement of weed seed on humans (foot traffic) and livestock from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat within the ACEC.

4.6.7.5 Livestock Grazing

Same as Alternative A.

4.6.7.6 Plant Community Restoration and Fire Management

Same as Alternative A.

4.6.7.7 Mitigation

Mitigation measures included with management actions under the range of alternatives in Chapter 2 and BMPs outlined in Appendix V would have major long-term benefits for soils and vegetation resources in CCMA because of major reductions in surface disturbing activities and increased emphasis on resources protection and restoration.

4.6.8 Impacts and Mitigation for Alternative F

4.6.8.1 Habitat Disturbance by Non-motorized Recreation

Non-motorized recreation under Alternative F would be similar to Alternative E for use both within and outside of the ACEC. As such, non-motorized recreation disturbance of serpentine riparian and upland

plant communities within the ACEC and nonserpentine riparian and upland plant communities outside of the ACEC would be similar to Alternative E.

Management Actions

Same as Alternative B.

4.6.8.2 Habitat Disturbance by Vehicle Use

Under Alternative F, vehicle use within the ACEC would not be permitted. Clear Creek Road (R1) would be decommissioned. As a result, there would be a major reduction (beneficial) of motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC as compared to Alternative A. Decommissioning Clear Creek Road will restore serpentine terrace potential habitat currently occupied by the road bed, back to San Benito evening primrose and other special status plant species that typically occupy the serpentine terraces. The proposal to decommission Clear Creek Road is in accordance with the 2005 BO for the CCMA RMP and final EIS (1-8-05-F-20). Motorized recreation outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Since vegetation impacts from the construction of the new routes outside of the ACEC are expected to be short term, and vegetation impacts from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and special status plant species habitat outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

4.6.8.3 Habitat Disturbance by Energy and Mineral Exploration

Same as Alternative E.

4.6.8.4 Noxious Weed Invasion

Under Alternative F, the movement of weed seed on vehicles from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat within the ACEC would cease, due to vehicle use not being permitted within the ACEC. As a result noxious weed invasion into serpentine riparian and upland San Benito evening primrose habitat and special status plant species habitat within the ACEC would be drastically reduced (beneficial). Movement of weed seed on vehicles within nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status special habitat outside of the ACEC would be limited. Under Alternative F, there would be continued movement of weed seed on humans (foot traffic) from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat within the ACEC. With livestock grazing only being permitted outside of the ACEC under Alternative F, movement of weed seed on livestock would only occur within nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat outside of the ACEC.

4.6.8.5 Livestock Grazing

Under Alternative F, livestock grazing would only be permitted outside of the ACEC. As a result, impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC from grazing would cease. Grazing impacts to nonserpentine riparian and upland San Benito evening primrose and special status plant species habitat outside of the ACEC would continue.

4.6.8.6 Plant Community Restoration and Fire Management

Same as Alternative A.

4.6.9 Impacts and Mitigation for Alternative G

4.6.9.1 Habitat Disturbance by Non-motorized Recreation

Under Alternative G, non-motorized recreation within the ACEC would not be permitted. As a result, non-motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC would cease. Similar to Alternative F, non-motorized recreation outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River zones. As such, non-motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat outside of the ACEC would be similar to Alternative F.

4.6.9.2 Habitat Disturbance by Motorized Recreation

Under Alternative G, motorized recreation within the ACEC would not be permitted. Clear Creek Road (R1) would not be decommissioned. As a result, motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and special status plant species habitat within the ACEC would be reduced slightly less so than Alternative F due to the fact that Clear Creek Road would not be decommissioned. Additionally, not decommissioning Clear Creek Road would prevent serpentine terrace potential habitat currently occupied by the road bed from being restored back to San Benito evening primrose and other special status plant species that typically occupy the serpentine terraces. Vehicle use outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Since impacts to vegetation from the construction of these few new routes are expected to be short term, and impacts to vegetation from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat outside of the ACEC would be similar to Alternatives E and F.

4.6.9.3 Vegetation Disturbance by Energy and Mineral Exploration

Same as Alternative E.

4.6.9.4 Noxious Weed Invasion

Under Alternative G, the movement of weed seed on vehicles from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat within the ACEC would cease (beneficial), due to vehicle use not being permitted within the ACEC, similar to Alternative F. Movement of weed seed on vehicles within nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat outside of the ACEC would be limited. Under Alternative G, there would be continued movement of weed seed on humans (foot traffic) within nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC. No livestock grazing would be permitted within the CCMA, therefore, weed seed movement by livestock within the CCMA would cease.

4.6.9.5 Livestock Grazing

Under Alternative G, livestock grazing would not be permitted within the CCMA. As a result, impacts to serpentine and nonserpentine riparian and upland vegetation would cease. Excessive mulch buildup may occur in nonserpentine grasslands. As a result, special status plant species that occur within the grasslands, such as stinkbells, may be adversely impacted through greater competition from invasive species and greater risk of catastrophic fire, due to increased fuel loads (adverse).

4.6.9.6 Plant Community Restoration and Fire Management

Same as Alternative E.

4.6.10 Impacts to Special Status Plant Species for the Proposed Action

4.6.10.1 Habitat Disturbance by Non-motorized Recreation

Under the Proposed Action, non-motorized recreation would continue both within and outside of the ACEC; however within the ACEC these recreation activities would be limited as visitor use is reduced. Camping impacts would be essentially eliminated within the ACEC. There would be a substantial reduction (beneficial) of the disturbance of serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC as compared to the No Action Alternative. The Proposed Action represents a moderate shift in non-motorized recreation activities from inside to outside of the ACEC as new recreation areas and campgrounds are established outside of the ACEC. Likewise, improved access to hunting areas and improved camping opportunities outside of the ACEC will likely encourage more hunters and recreation users to camp in those areas outside of the ACEC as well. As a result, there would likely be a minor increase (adverse) of the disturbance of nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat plant outside of the ACEC.

4.6.10.2 Habitat Disturbance by Vehicle Use

Under the Proposed Action, vehicle use within the ACEC would be restricted to a *Scenic Touring Route* for highway-licensed vehicles only. Vehicle use outside of the ACEC would be slightly increased (adverse) as compared to the No Action Alternative due to the construction of a limited number of access routes through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River Zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. This represents a moderate shift in

the location of motorized recreation from inside to outside of the ACEC, and a resulting increase (adverse) of motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat outside of the ACEC.

Since vegetation impacts from the construction of the new routes outside of the ACEC are expected to be short term, and vegetation impacts from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine riparian, upland San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC would be slightly greater (adverse) than the No Action Alternative.

4.6.10.3 Habitat Disturbance by Energy and Mineral Exploration

Under the Proposed Action, energy and mineral exploration would only be permitted outside of the ACEC. As a result, impacts to serpentine upland and riparian San Benito evening primrose and other special status plant species habitat within the ACEC from energy and mineral exploration would cease and provide long term moderate beneficial impacts. There is a potential for energy and mineral exploration impacts to nonserpentine riparian and upland plant communities outside of the ACEC, however as the potential for such development is low, it is unlikely. Energy and mineral exploration and development would proceed on a case-by-case basis. Energy and mineral development can result in loss of vegetation, special status species habitat, and adverse impacts on local water quality. Development would require certain mitigation measures, and the overall strategy for minerals development is to proceed under principles of balanced multiple-use management, which would minimize impacts to special status species habitat.

4.6.10.4 Noxious Weed Invasion

Under the Proposed Action, there would be a reduced (beneficial), but continued movement of weed seed on vehicles from nonserpentine riparian and upland plant communities, into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat, coincident with even greater vehicle use restrictions within the ACEC. As a result, there would be even less exotic species invasion into serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC (beneficial). There would likely be increased (adverse) movement of weed seed on vehicles used within nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC, coincident with moderate increase in anticipated vehicle use in those areas. There would be limited continued movement of weed seed on humans (foot traffic) and livestock from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status species habitat within the ACEC. Management actions for controlling noxious weeds within San Benito evening primrose or other special status plant species habitat, would include the control of noxious weeds as a form of habitat rehabilitation and vegetation manipulation.

4.6.10.5 Livestock Grazing

Livestock grazing would continue to be permitted within and outside of the ACEC, resulting in minor long-term negative impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat, as well as nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat. Special status plant species monitoring would be conducted in order to prevent sharp declines in plant numbers and adverse impacts to occupied and potential habitat.

4.6.10.6 Plant Community Restoration and Fire Management

Restoration of San Benito evening primrose habitat and other special status plant species habitat would continue within and outside of the ACEC, including utilization of control burns for fuels reduction and habitat improvement, which would have moderate long-term beneficial impacts on CCMA resources.

4.6.10.7 Mitigation

Mitigation measures included with management actions in Chapter 2 and BMPs outlined in Appendix V would have major long-term benefits for soils and vegetation resources in CCMA because of major reductions in surface disturbing activities and increased emphasis on resources protection and restoration.

Mitigation measures, including the CABE Monitoring Plan outlined in Appendix IV, measures to prevent excessive vegetation loss including vegetation compliance monitoring, and measures incorporated into vegetation resource management actions would all have moderate long-term beneficial impacts on biological resources in CCMA.

4.6.11 Overview of Impacts to Special Status Animal Species

As with plants, impacts to special status animal species are strongly associated with impacts to soils (Chapter 4.8; Soil Resources; Tables 4.8-1 through 4.8-10) and vegetation (Chapter 4.4; Biological Resources – Vegetation; Tables 4.4-1 through 4.4-12). Specifically, erosion and sediment entry into creeks has the potential to directly degrade habitat for foothill yellow-legged frogs, southwestern pond turtles, and Monterey roach, and to indirectly impact two-striped garter snakes by reducing populations of native fish and amphibians. Woodcutting can directly affect habitat for birds, bats, and other mammal species. Other impacts are unique to animal species: noise and light pollution; vehicle strikes; harassment of adults and young; litter; and release of nonnative competitors and predators.

Table 4.6-25 summarizes the management actions that would affect special status animal species.

Table 4.6-25 Summary of Special Status Species Management Actions

Management Action	Short Description	Alternative			
		A	B,C	D,E,F	G
SSS-A1	Regulate surface disturbance	✓	✓	✓	✓
SSS -A2	Monitor management effects	✓	✓	✓	✓
SSS -A3	Design roads to avoid habitat	✓	✓	✓	✓
SSS -A4	Provide on/offsite compensation	✓	✓	✓	✓
SSS -A5	Enforce seasonal restrictions	✓	✓	✓	✓
SSS -A6	Maintain buffers around habitat	✓	✓	✓	✓
SSS -A7	Manage/evaluate/consult for SSS	✓	✓	✓	✓
SSS -A8	Manage for CABE	✓	✓	✓	✓
SSS -A9	Monitor all populations of CABE	✓	✓	✓	✓
SSS -A10	Monitor water and soil	✓	✓	✓	✓
SSS –A11.	Rehabilitate/reseed for CABE	✓	✓	✓	✓
SSS –A12	Initiate ecological study of CABE	✓	✓	✓	✓
SSS –A13	Monitor known populations of SSS	✓	✓	✓	✓
SSS –A14	Protect CABE	✓	✓	✓	✓
SSS –A15	Monitor unprotected populations	✓	✓	✓	✓
SSS –A16	Inventory suitable SS plant habitat	✓	✓	✓	✓
SSS –A17.	Study effects of disturbances	✓	✓	✓	✓
SSS –A18	Compliance monitoring for CABE	✓	✓	✓	✓
SSS –A19	Revise compliance monitoring plan	✓	✓	✓	✓
SSS –BC1	Monitor/maintain SSS habitat		✓		
SSS –BC2	Prohibit collection of SSS		✓	✓	✓
SSS-DEF1	Adopt the CABE Monitoring Plan			✓	✓
SSS-DEF2	Relocate activities in SSS habitat.			✓	✓
SSS –G1	Limit proposed surface activities				✓
SSS –G2	Conduct restoration in closed areas				✓
SSS –G3	Restoration of ecological processes.				✓

4.6.11.1 Special Status Animal Species Disturbance by Vehicle Use

Vehicle use, especially off-road, is known to disturb soils and cause shifts in seral state in vegetation. Therefore a multitude of impacts to many of CCMA's special status species can be predicted. Direct impacts to special status animal species include vehicle strikes and destruction of habitat.

Vehicles strikes cause direct mortality of wildlife, including special status species. Off-road vehicle use can lead to direct mortality of both terrestrial and aquatic species. Coast horned lizards are extremely cryptic and can be killed by vehicle use in barrens. Sandy soil habitats occupied by California legless lizards near riparian areas are prone to vehicle disturbance and, when disturbed, can rapidly dry out, causing legless lizards to die or abandon habitat. Southwestern pond turtles lay their eggs in sandy soils,

and these too can be directly destroyed or can become unviable due to drying. Confining vehicle use to roads reduces the chances of direct mortality but significant mortality can still occur. Coast horned lizards, two-striped garter snakes, and southwestern pond turtles are particularly at risk because they tend to bask on roads during daylight hours when use is highest; they are also relatively slow-moving and difficult to see and avoid. Even aquatic species such as foothill yellow-legged frogs frequently are found crossing roads. California legless lizards are at lower risk due to their tendency to remain underground. All of the special status mammal species are nocturnal, and face a somewhat lower risk due to lower vehicle use, but are still subject to mortality from vehicles operated at night.

Habitat destruction results primarily from off-road vehicle use and can cause significant, long term reduction in available habitat, especially for terrestrial mammals and reptiles, but also for riparian species through loss of riparian vegetation, alteration of stream banks, and sedimentation.

4.6.11.2 Special Status Animal Species Disturbance by Energy and Mineral Exploration

Special status bats can be affected by any use of existing mine shafts for further mining purposes. New exploratory or extractive earth disturbance can destroy animal habitat on the surface and can lead to sediment deposition in creeks, altering habitat for aquatic species such as Monterey roach and foothill yellow legged frogs.

4.6.11.3 Special Status Animal Species Disturbance by Noxious Weed Invasion

Coast horned lizards, California legless lizards and all three species of kangaroo rats all prefer open understory habitats and therefore can be negatively affected by nonnative vegetation such as yellow star thistle if the vegetation becomes dense enough. Nonnative riparian vegetation such as *Arundo* can degrade riparian habitat for foothill yellow-legged frogs, southwestern pond turtles, two-striped garter snakes, and Monterey roach.

4.6.11.4 Special Status Animal Species Disturbance by Livestock Grazing

Overgrazing in riparian habitats can degrade habitat for foothill yellow-legged frogs, two-striped garter snakes, southwestern pond turtles and Monterey roach. Overgrazing in dry habitats can reduce *Atriplex* stands and other shrub habitats preferred by the three special status kangaroo rats. In oak woodlands, grazing can prevent new tree seedlings and therefore retard the replacement of mature oaks that provide nesting and roosting habitat for special status birds and bats.

4.6.11.5 Special Status Animal Species Disturbance by Commercial Woodcutting

Commercial woodcutting has the potential to destroy or disturb nesting and roosting sites for special status birds and bats.

4.6.11.6 Special Status Animal Species Disturbance by Plant Community Restoration and Fire Management

Plant restoration projects can have short term displacement and disturbance effects on special status animal species, but would tend to benefit native animals in the long term due to the return of native habitats. Fire management can also cause limited mortality and displacement of special status species, but can also increase habitat for particular species such as coast horned lizard and kangaroo rats which require open understory and bare ground habitats.

4.6.11.7 Special Status Animal Species Disturbance by Water Resources Management

Any actions that affect water availability will likely impact special status species that occupy aquatic habitats such as the Monterey roach, foothill yellow-legged frog, southwestern pond turtle, and two-striped garter snake as well as the two special status invertebrates that may be present in CCMA. Significant effects can result from alterations in flow regime. For example, pulsed releases from impoundments are known to negatively affect breeding foothill yellow-legged frogs.

4.6.11.8 Special Status Animal Species Disturbance by Recreation

The discharge of firearms for hunting and target shooting purposes, and the presence of hunters in wildlife habitat, can temporarily disturb or displace sensitive species. These activities can also can have major indirect negative impacts on raptors, including California condors, due to ingestion of lead ammunition from carcasses and gut piles. The California Department of Fish and Game (DFG) has placed a ban on lead ammunition that applies to most hunting activities in the CCMA. The restrictions on lead ammunition do not apply to target shooting. Therefore, the proposed action for recreation resources is not likely to adversel;y affect special species animal species in the CCMA.

4.6.12 Impacts and Management Actions for Alternative A

Under Alternative A, both highway-licensed and green sticker vehicle recreation and its impacts will continue to be concentrated within the ACEC. Impacts outside of the ACEC will continue to be minor as few designated open routes exist outside of the ACEC. As a result, special status species will still be subject to direct mortality both on and off roads. Vehicle disturbance will continue to result in habitat disturbance and vegetation loss, resulting in accelerated erosion rates and sedimentation of local watersheds.

<u>Management actions</u>

Twenty-one management actions specific to special status species are common to all alternatives, including A. Six actions are specific to CABE and are addressed under the Special Status Plants section of this chapter. The remaining actions are tailored to reduce or mitigate the effects of vehicle use on habitat, and include avoidance of habitat through signings and fencing (including buffers); monitoring the effects of management actions on special status species; managing special status species through the interagency consultation process; and on- and off-site compensation. The combined effect of management actions will be to offset impacts to special status species such that catastrophic declines do not occur and all species continue to exist at CCMA.

4.6.13 Impacts and Management Actions for Alternatives B and C

Special Animal Species and Disturbance by Vehicle Use

Alternatives B and C would impose temporal restrictions on vehicle use within the Serpentine ACEC as described under section 4.6.4.1 above. The accompanying reduction in vehicle strikes and habitat destruction would be quantitative, rather than qualitative, because the geographic distribution of effects (e.g. both off- and on-road travel) would remain the same as under Alternative A. Effects outside the Serpentine ACEC would be unchanged relative to alternative A.

The one management action specific to alternatives B and C is to prohibit collecting special status animals in CCMA without permission from BLM. Because all of the species named above are off-limits to collecting without special collecting permits from either CDFG or USFWS, the restriction would

essentially provide BLM a role in decision making regarding take of special status species from CCMA and would likely lead to better information sharing, better management planning, and ultimately, enhanced conservation of special status species at CCMA.

One management action, SSS-BG1, provides for monitoring of all special status species at CCMA and is common to all alternatives except alternative A. Due to the demonstrable beneficial interaction between monitoring and management, this provision would likely have a large and positive effect on special status species conservation at CCMA.

4.6.14 Impacts and Management Actions for Alternatives E-F

Special Animal Species and Disturbance by Vehicle Use

Alternatives E-G represent incremental temporal and geographic restrictions in on- and off-road vehicle use as described under sections 4.6.7 and 4.6.8 above. The net effect of such restrictions are to greatly reduce the impacts to special status species from vehicular disturbance and impacts relative to alternatives A-C, and respect a significant state shift away from those alternatives. Under E-F, habitat preservation becomes a priority activity at CCMA, with major long-term beneficial impacts on special status species.

4.6.15 Impacts and Management Actions for Alternatives G

Special Animal Species and Disturbance by Vehicle Travel

Under alternative G, vehicle use in the Serpentine ACEC would be prohibited as described in section 4.6.9 above. The response of special species populations and habitat are not wholly predictable, but it is expected that a more "natural" regime would eventually reassert itself at CCMA. Because management actions under alternative A were mostly designed to mitigate vehicle disturbance, they would not be implemented or would be implemented at a lower level. If such actions had beneficial effects above and beyond the simple mitigation of disturbance, a reduction in these collateral beneficial effects would be expected. In particular, ongoing restoration efforts might be reduced or halted, leaving habitats to essentially self-restore at a natural rate. Overall, a major beneficial effect on all special status species is predicted to occur under alternative G. SSS-G1 would further limit surface activities in the Serpentine ACEC, which would have long-term beneficial impacts on special status animal species.

4.6.16 Impacts to Special Status Animal Species for the Proposed Action

As with plants, impacts to special status animal species are strongly associated with impacts to soils (Chapter 4.8; Soil Resources; Tables 4.8-1 through 4.8-10) and vegetation (Chapter 4.4; Biological Resources – Vegetation; Tables 4.4-1 through 4.4-12). Specifically, erosion and sediment entry into creeks has the potential to directly degrade habitat for foothill yellow-legged frogs, southwestern pond turtles, and Monterey roach, and to indirectly impact two-striped garter snakes by reducing populations of native fish and amphibians. Woodcutting can directly affect habitat for birds, bats, and other mammal species. Other impacts are unique to animal species: noise and light pollution; vehicle strikes; harassment of adults and young; litter; and release of nonnative competitors and predators.

4.6.16.1 Habitat Disturbance by Vehicle Use

Vehicle use, especially off-road, is known to disturb soils and cause shifts in seral state in vegetation. Therefore a multitude of impacts to many of CCMA's special status species can be predicted. Direct impacts to special status animal species include vehicle strikes and destruction of habitat.

Vehicles strikes cause direct mortality of wildlife, including special status species. Off-road vehicle use can lead to direct mortality of both terrestrial and aquatic species. Coast horned lizards are extremely cryptic and can be killed by vehicle use in barrens. Sandy soil habitats occupied by California legless lizards near riparian areas are prone to vehicle disturbance and, when disturbed, can rapidly dry out, causing legless lizards to die or abandon habitat. Southwestern pond turtles lay their eggs in sandy soils, and these too can be directly destroyed or can become unviable due to drying. Confining vehicle use to roads reduces the chances of direct mortality but significant mortality can still occur. Coast horned lizards, two-striped garter snakes, and southwestern pond turtles are particularly at risk because they tend to bask on roads during daylight hours when use is highest; they are also relatively slow-moving and difficult to see and avoid. Even aquatic species such as foothill yellow-legged frogs frequently are found crossing roads. California legless lizards are at lower risk due to their tendency to remain underground. All of the special status mammal species are nocturnal, and face a somewhat lower risk due to lower vehicle use, but are still subject to mortality from vehicles operated at night.

Habitat destruction results primarily from off-road vehicle use and can cause significant, long term reduction in available habitat, especially for terrestrial mammals and reptiles, but also for riparian species through loss of riparian vegetation, alteration of stream banks, and sedimentation.

Management actions are tailored to reduce or mitigate the effects of vehicle use on habitat, and include avoidance of habitat through signings and fencing (including buffers); monitoring the effects of management actions on special status species; managing special status species through the interagency consultation process; and on- and off-site compensation. The combined effect of management actions will be to offset impacts to special status species such that catastrophic declines do not occur and all species continue to exist at CCMA.

The Proposed Action represents incremental temporal and geographic restrictions in on- and off-road vehicle use, and the net effect of such restrictions are to greatly reduce the impacts to special status species from vehicular disturbance and impacts relative to the No Action Alternative. Under the Proposed Action, habitat preservation becomes a priority activity at CCMA, with major long-term beneficial impacts on special status species. Restrictions on vehicle use within the Serpentine ACEC and the accompanying reduction in vehicle strikes and habitat destruction would provide moderate long term beneficial effects. Effects outside the Serpentine ACEC, due to some expected increase in vehicle use, would result in minor long term adverse effects. Monitoring of all special status species in the CCMA would be a demonstrable beneficial interaction between monitoring and management, and this provision would likely have a large and positive effect on special status species conservation at CCMA.

4.6.16.2 Habitat Disturbance by Energy and Mineral Exploration

Special status bats can be affected by any use of existing mine shafts for further mining purposes. New exploratory or extractive earth disturbance can destroy animal habitat on the surface and can lead to sediment deposition in creeks, altering habitat for aquatic species such as Monterey roach and foothill yellow legged frogs.

Under the Proposed Action, energy and mineral exploration would only be permitted outside of the ACEC. As a result, impacts to special status animal species within the ACEC from energy and mineral exploration would cease and provide long term moderate beneficial impacts. There is a potential for energy and mineral exploration impacts to nonserpentine special status animal species habitat outside of the ACEC, however as the potential for such development is low, it is unlikely. Energy and mineral exploration and development would proceed on a case-by-case basis. Energy and mineral development can result in loss of special status animal species habitat. Development would require certain mitigation measures, and the overall strategy for minerals development is to proceed under principles of balanced multiple-use management, which would minimize impacts to special status animal species habitat.

4.6.16.3 Habitat Disturbance by Noxious Weed Invasion

Coast horned lizards, California legless lizards and all three species of kangaroo rats all prefer open understory habitats and therefore can be negatively affected by nonnative vegetation such as yellow star thistle if the vegetation becomes dense enough. Nonnative riparian vegetation such as *Arundo* can degrade riparian habitat for foothill yellow-legged frogs, southwestern pond turtles, two-striped garter snakes, and Monterey roach.

An integrated pest management (IPM) approach including prescribed fire, mechanical, chemical, and biological treatments, and public outreach are beneficial to reducing the spread of noxious, invasive weeds. An IPM for noxious weed abatement would be beneficial to improving special status animal species habitat community structure and function. A weed IPM is a systematic approach that integrates all information and management tactics to prevent the introduction, establishment, and spread of noxious weeds. An effective IPM noxious weed program includes best management practices for weed abatement, including removal, adaptive management, post-treatment rehabilitation, and public outreach.

4.6.16.4 Habitat Disturbance by Livestock Grazing

Livestock grazing would continue to be permitted within and outside of the ACEC, resulting in minor long term impacts to special status animal species habitat. Overgrazing in riparian habitats can degrade habitat for foothill yellow-legged frogs, two-striped garter snakes, southwestern pond turtles and Monterey roach. Overgrazing in dry habitats can reduce *Atriplex* stands and other shrub habitats preferred by the three special status kangaroo rats. In oak woodlands, grazing can prevent new tree seedlings and therefore retard the replacement of mature oaks that provide nesting and roosting habitat for special status birds and bats.

4.6.16.5 Habitat Disturbance by Plant Community Restoration and Fire Management

Plant restoration projects can have short term displacement and disturbance effects on special status animal species, but would tend to benefit native animals in the long term due to the return of native habitats. Fire management can also cause limited mortality and displacement of special status species, but can also increase habitat for particular species such as coast horned lizard and kangaroo rats which require open understory and bare ground habitats. Restoration and habitat improvement, including utilization of control burns for fuels reduction, would have moderate long-term beneficial impacts on CCMA resources.

4.6.16.6 Habitat Disturbance by Water Resources Management

Any actions that affect water availability will likely impact special status species that occupy aquatic habitats such as the Monterey roach, foothill yellow-legged frog, southwestern pond turtle, and two-striped garter snake as well as the two special status invertebrates that may be present in CCMA. Significant effects can result from alterations in flow regime. For example, pulsed releases from impoundments are known to negatively affect breeding foothill yellow-legged frogs. A reduction of miles of routes in riparian areas, and implementation of BMPs (see Appendix V) related to watershed improvement and road maintenance to reduce erosion and off-site sedimentation transport, and to reduce impacts to watershed resources would have long term major beneficial impacts.

4.6.16.7 Habitat Disturbance by Recreation Activities

of firearms for hunting and target shooting purposes, and the presence of hunters in wildlife habitat, can temporarily disturb or displace sensitive species. These activities can also can have major indirect negative impacts on raptors, including California condors, due to ingestion of lead ammunition from carcasses and gut piles. The California Department of Fish and Game (DFG) has placed a ban on lead ammunition that applies to most hunting activities in the CCMA. The restrictions on lead ammunition do not apply to target shooting. Therefore, the proposed action for recreation resources is not likely to adversel;y affect special species animal species in the CCMA.

4.6.17 Cumulative Effects

None of the special status animal species are confined to CCMA, and therefore effects on them at CCMA must be viewed in the larger scale of impacts to these species across their range. Coast horned lizards, California legless lizards, and two-striped garter snakes are all under threat from coastal development in historic habitats; therefore negative impacts at CCMA may have a disproportionate effect on the status of any of those species. Foothill yellow-legged frogs are at risk rangewide from large-scale conversion of cobble-bottomed riverine systems downstream from dams and impoundments and are especially vulnerable in the southern end of the range, which includes CCMA. If foothill yellow-legged frogs continue to decline, CCMA could play a crucial role as a refuge for this amphibian species. Southwestern pond turtles are also at risk due to residential development rangewide and undeveloped areas such as CCMA may be critical for the species' perseverance. California condors are slowly increasing in numbers but continue to suffer from ongoing contacts with humans and human artifacts such as power lines, which elevates the significance of relatively unoccupied regions such as CCMA to the species.

One important adverse cumulative impact of restricting off-road vehicle use at CCMA is the predictable uptick in unauthorized off-road vehicle operation and accompanying negative impacts in other areas, such as the Tumey and Panoche Hills, which are also known to provide valuable habitat for other special status species not found in CCMA, such as the San Joaquin kit fox, giant kangaroo rat, and blunt-nosed leopard lizard.

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4.7 Air Quality

For ease of reference, the management goals from Chapter 2 are restated here:

- The goal for air quality management is to ensure that BLM authorizations and management activities comply with the Federal Land Policy and Management Act (FLPMA) and local, State, and Federal air quality regulations, requirements, State Implementation Plans, and Regional Air Board standards and goals.

4.7.1 Introduction

This section addresses impacts to air quality from activities allowed under other resource programs. The primary air quality impacts that can be reasonably expected to occur are vehicle and dust emissions associated with off-highway vehicle recreation and motorized access on BLM lands. As described under the purpose and need in Chapter 1, this RMP/EIS also incorporates new information about CCMA visitor health risk from the Environmental Protection Agency's CCMA Asbestos Exposure and Human Health Risk Assessment to address public health and safety and resources protection issues in CCMA. The analysis of management alternatives, including the Proposed Action, and their associated human health risk from exposure to airborne asbestos emissions is addressed under "Hazardous Materials and Public Health and Safety" in Sections 4.2.

Other air quality impacts evaluated in this PRMP/FEIS include hazardous air pollutant (HAP) and particulate matter emissions from fire management activities, energy and minerals development, route maintenance, and other BLM management activities and land use authorizations.

4.7.1.2 Assumptions and Incomplete or Unavailable Information

4.7.1.2.1 Air Conformity Analysis

In lieu of preparing another air conformity analysis for the Proposed CCMA RMP and Final EIS, the Hollister Field Office considers the 2005 analysis to be adequate to determine conformity because all the management alternatives and the Proposed Action would substantially reduce emissions associated with BLM's land use decisions and public vehicle use in the CCMA from the current management (No Action Alternative). Based on this assumption, Alternatives B, C, D, E, F, G, and the Proposed Action each conform with all applicable local, state, and federal air quality laws, regulations, and statutes, as defined in the San Joaquin Valley, CA (Fresno County) Planning Area State Implementation Plan (SIP) because the potential total emissions are well below *de minimis* levels:

Per 40 CFR 93.153(b)(1)
<50 T/Y NOx ;
<50 T/Y VOC (Serious Ozone NAA);
<70 T/Y PM-10 (Serious PM-10 NAA); and
<70 T/Y PM-2.5 (PM-2.5 NAA)

4.7.1.2.2 Climate Change

Secretarial Order No. 3289, Amendment No. 1, dated February 22, 2010, reinstated the provisions of Secretarial Order No. 3226, signed on January 19, 2001, requiring all Department of the Interior agencies to evaluate climate change impacts in management planning. The most recent order states: "Each bureau and office of the Department must consider and analyze potential climate change impacts when undertaking long-range planning exercises, setting priorities for scientific research and investigations,

developing multi-year management plans, and making major decisions regarding potential use of resources under the Department's purview."

This analysis assumes that global climate change will make the planning area warmer and drier by the end of the 21st century. However, the body of information and predictive models for climate change is in its infancy regarding prediction of site specific impacts to areas such as the CCMA, and the plan assumes that knowledge will advance quickly with the current emphasis on climate research and model development. As the RMP is implemented, BLM managers would place a continued emphasis on research, and studies may include components to assess the impacts of changing climate. In the event that climate change made achievement of RMP objectives themselves infeasible, the plan would need to be amended accordingly. Overall, BLM's air quality management efforts under the range of alternatives and the Proposed Action considered in this PRMP/FEIS would have negligible impacts on global climate change because greenhouse gas emissions would be lower than the current conditions.

4.7.2 Overview of Impacts

4.7.2.1 Air Quality Management Actions

Management strategies for air quality center on compliance with State and Federal regulations for hazardous air pollutants. Generally, the impacts from these management actions would be beneficial for air quality and public health and safety.

In particular, using the best management practices (BMPs) identified in Appendix V for dust abatement on roads and during project implementation that include, but are not limited to, paving, base rock, chip seal, or applications of liquid based copolymers to stabilize and solidify soils or aggregates and control erosion would have major long-term beneficial impacts for air quality and public health and safety by reducing airborne asbestos emissions.

The following resources/programs will have no or negligible impacts to air quality and will not be further addressed in this section: wildlife (effects of various habitat management tools will be covered in the fire and grazing sections), vegetation, soils, water resources, geology and paleontology, cultural resources, and visual resources management.

4.7.2.2 Other Management Actions

Recreation and Transportation & Access

Motorized vehicle travel produces air pollution from engine exhaust and fugitive dust from travel on unpaved roads. Fugitive dust may also be produced to a much lesser extent from travel on paved roads where soil has been tracked onto the paved road.

Vehicles sold and operated in California are equipped with engines that are designed to meet strict mobile-source air pollution regulations; vehicles maintained in compliance with these rules will minimize air pollution emissions. In addition, fuel sold in California must meet specifications that are designed to minimize air pollution.

Other recreational uses such as hiking, rockhounding, and vehicle touring also generate emissions of hazardous air pollutants. Human health risks associated with recreational use are addressed under Hazardous Materials and Public Health and Safety in Section 4.2.

Fire Management

Prescribed fires are used to manage fuel stock (vegetation). Small acreages are burned on a rotating basis over the course of several years to reduce the available fuel and thus manage fires. Each air district has specific regulations regarding plans and/or permits required and conditions for prescribed burning. Before implementing each prescribed fire, coordination with the air districts, application for plans/permits, and receipt of an approved permit would be needed.

Fire can have adverse impacts on air quality, depending on the size, location, and type of fire. However, prescribed fires are used to manage fuel stock (vegetation); small acreages would be burned on a rotating basis over the course of several years to reduce the available fuel and thus manage fires. Prescribed fires offer a long term benefit of reducing the available fuel and thus reducing the potential for future wildland fires.

Prescribed fire activities would be coordinated with the appropriate APCD, depending on the location of the prescribed fire and applicable smoke management plan, or permit approvals would be obtained before implementing prescribed fires. This would minimize concurrent multiple smoke sources close to one another that could result in a cumulative smoke impact.

Energy and Mineral Development

Energy and mineral development involves extracting materials from the earth using various methods, which depend on the type of material being extracted. Extraction of petroleum resources generally requires preparing the site, drilling, installing well equipment, and storing or transporting the resource off-site. Mineral extraction involves mechanical removal of minerals via heavy equipment and transport off-site via truck.

These processes produce air pollution in the form of engine exhaust emissions and fugitive dust from the transport of materials and the movement of vehicles over unpaved areas. Additional air pollution may be produced at extraction sites where a facility for processing the extracted material is located.

Before initiating any type of energy or mineral development, the entity proposing the development would need to apply for and obtain approval for air permits from the air district where the activity would be located. The permit rules provide for an evaluation of air quality impacts for the proposed activity and must be deemed acceptable by the administering APCD before an air permit would be approved.

4.7.3 Impacts and Mitigation for Alternative A

4.7.3.1 Air Quality Management Actions

Under the No Action Alternative, BLM would continue to address air quality standards for land use authorizations in CCMA to comply with State and Federal air quality regulations. Air quality impacts under Alternative A would have negligible benefits and perpetuate current attainment levels for air quality standards.

4.7.3.2 Other Management Actions

Recreation and Transportation & Access

Alternative A would allow OHV use on 242 miles of unpaved roads and trails and 478 acres of barren play areas. Compared to existing conditions, the air quality would remain unchanged as related to emissions of particulate matter and PM_{10} & $PM_{2.5}$ concentrations. The amount of OHV use would also be sustained at 35,000 visitor use days, with slight increases over the life of this plan. Therefore, vehicles would continue to emit pollutants, although stricter emission standards for vehicles and motorcycles

imposed by the State of California could contribute to some minor improvement in air quality. There could be some potential for reductions in fugitive dust and particulate matter due to the miles of closed roads that are scheduled to be reclaimed and the restoration of barrens where soil disturbing activities would be eliminated. Though the particulate emissions varied among the alternatives, the difference among all alternatives was nominal.

Alternative A would have the greatest impacts on air quality, as described below:

Temporary dry season use restrictions were implemented in 2005 to restrict public use and motorized access of the Serpentine ACEC from June 1st through October 15th. These restrictions are intended to reduce particulate emissions during the driest part of the year, providing a substantial, but temporary, improvement to air quality.

Alternative A also includes the mitigation measures to restore closed routes to a natural landscape. This will result in fewer emissions due to the inability to easily use closed roads and in a reduction in emissions due to wind. Compliance with the ATCM for airborne asbestos, and implementing Best Management Practices and dust control measures related to road maintenance will also contribute to a reduction in airborne emissions for these operations. In the proposed action all barren play areas within the San Joaquin Valley Air Basin portion of the CCMA will be closed, and would contribute to a reduction in particulate matter emissions from these lands for the air basin. Environmental impacts related to ozone precursor emissions would likely remain unchanged from present conditions.

4.7.3.3 Mitigation

Air quality impacts under Alternative A would be mitigated by maintaining compliance with the National Ambient Air Quality Standards, NESHAPs, applicable California air quality regulations, and State Implementation Plans.

4.7.4 Impacts and Mitigation Common to Alternatives B and C

4.7.4.1 Air Quality Management Actions

Under these alternatives, air quality management strategies rely on compliance with local, State, and Federal regulations. Alternatives B and C would have negligible impacts on existing air quality conditions described in Chapter 3, because OHV recreation would continue inside the Serpentine ACEC.

4.7.4.2 Other Management Actions

Recreation and Transportation & Access

Improvements to major routes identified under Transportation and Access would have major long-term beneficial impacts on air quality by reducing overall emissions from vehicle travel on roadways in CCMA.

In particular, paving the major routes would be the most effective way to reduce emissions, including hazardous air pollutants. According to studies conducted by the California DTSC, applying base rock and chip seal to major routes, would also reduce emissions on those routes.

Under Alternative C, there would be fewer routes designated as open compared to current conditions. Overall, there will be a reduction of approximately 40 percent of the miles of unpaved routes available for use, and a 100 percent reduction in acres of barren play areas. Additionally, Alternative C motorized vehicle travel on major routes roads to minimize air pollution from dust and exhaust by restricting vehicle types and seasons when vehicles could be used.

Fire Management and Energy & Minerals

Impacts from other management actions, such as fire management and energy and mineral development would be the same as those described in Chapter 3 and Section 4.1.2, "Overview of Impacts".

4.7.4.3 Mitigation

Prescribed fire activities would be coordinated with the APCD charged with protecting air quality within the locale of the prescribed fire. Smoke management plans and/or permit applications would be prepared and submitted for approval, and smoke-dispersion models would be used as a tool to evaluate the potential for air quality impacts from fires on BLM public lands before conducting prescribed fires. Information provided by the model would also aid decision makers in determining potentially adverse impacts from prescribed fires, or wildland fires, and how to mitigate those impacts.

4.7.5 Impacts and Mitigation for Alternatives D and E

4.7.5.1 Air Quality Management Actions

Under these alternatives, air quality management strategies rely on compliance with local, State, and Federal regulations. Alternatives D and E would have positive long-term impacts on air quality compared to Alternatives A, B, or C by reducing emissions of hazardous air pollutants. However, effects on existing air quality conditions described in Chapter 3 would still be negligible under Alternative D, in particular, because OHV recreation would continue outside the Serpentine ACEC.

4.7.5.2 Other Management Actions

Recreation and Transportation & Access

Under Alternatives D and E, certain resource uses would be limited or excluded in sensitive areas. In general, air quality impacts under this alternative would be limited to recreation, transportation and access. However, applying surfactants on major routes identified under Alternative D and E would have moderate beneficial impacts on air quality because biodegradable liquid copolymers can effectively reduce emissions, including hazardous air pollutants.

Assuming BLM would follow manufacturer recommended application rates, overall reductions in emissions on major routes in the Serpentine ACEC under Alternatives D and E would be greater than Alternatives A, B, or C. Emissions would be significantly less because vehicle travel would only be authorized on major routes, thereby minimizing the amount of fugitive dust that would be tracked onto these routes from other non-improved routes and trails.

Alternative D would further reduce air pollution from dust and exhaust by restricting vehicle types to full-size vehicles, whereas Alternative E would allow for potentially more visitor use because all highway-licensed vehicles would be authorized on the major routes designated open in the Serpentine ACEC under this alternative.

In addition, the reduction in designated open routes and the enforcement of these designations would result in less off route travel and route proliferation. Off route travel creates new roads, which increases the particulate matter emissions due to vehicle use and windblown emissions.

Fire Management and Energy & Minerals

Air quality impacts from fire management and energy and minerals would be negligible compared to other alternatives, although there would be a minor long-term benefit to air quality from withdrawal of mineral entry on public lands in the Serpentine ACEC.

4.7.5.3 Mitigation

Mitigation measures are contained in the management actions in Chapter 2. The effects of those measures are same as Alternatives A through E.

4.7.6 Impacts and Mitigation for Alternatives F and G

4.7.6.1 Air Quality Management Actions

Under these alternatives, air quality management strategies rely on compliance with local, State, and Federal regulations. Alternatives F and G would have the greatest beneficial long-term impacts on air quality compared to all other alternatives. Emissions of hazardous air pollutants would be limited to foot traffic, vehicle travel by existing rights-holders, and limited BLM resource management actions.

Overall, Alternative F and G would have long-term positive effects on existing air quality conditions described in Chapter 3.

4.7.6.2 Other Management Actions

Air quality impacts under Alternatives F and G would be negligible with regard to recreation and public use. Air quality impacts from land use authorizations would be regulated by State and/or local air quality regulations applicable to such facilities. Particulate emissions from prescribed fire activities would be regulated by air district smoke management and/or prescribed fire rules.

4.7.6.3 Mitigation

Mitigation measures are contained in the management actions in Chapter 2. The effects of those measures are same as Alternatives A through F.

4.7.7 Impacts to Air Quality for the Proposed Action

4.7.7.1 Air Quality Management Actions

Under the Proposed Action, BLM would continue to to manage air resources for land use authorizations in CCMA to comply with the Federal Land Policy and Management Act (FLPMA) and State and Federal air quality regulations, and implement air quality management strategies that rely on compliance with local, State, and Federal regulations. There would be moderate long-term beneficial impacts on air quality compared to the No Action Alternative by reducing emissions of hazardous air pollutants, and in particular airborne asbestos within the ACEC. There would be minor long term localized effects on existing air quality conditions described in Chapter 3 as motorized recreation would continue outside the Serpentine ACEC.

4.7.7.2 Other Management Actions

Recreation and Travel & Transportation Management

The Proposed Action also includes mitigation measures to restore and reclaim closed routes to a natural landscape. This will result in fewer emissions due to the inability to easily use closed roads and in a reduction in emissions due to wind. Compliance with the ATCM for airborne asbestos, and implementing Best Management Practices and dust control measures related to road maintenance would also contribute to a reduction in airborne emissions for these operations. In the Proposed Action all barren play areas within the San Joaquin Valley Air Basin portion of the CCMA will be closed, and would contribute to a reduction in particulate matter emissions from these lands for the air basin. Environmental impacts related to ozone precursor emissions would likely remain unchanged from present conditions.

Improvements to major routes identified under Transportation and Access would have major long-term beneficial impacts on air quality by reducing overall emissions from vehicle travel on roadways in CCMA. In particular, paving the major routes would be the most effective way to reduce emissions, including hazardous air pollutants. According to studies conducted by the California DTSC, applying base rock and chip seal to major routes, would also reduce emissions on those routes. Applying surfactants on major routes would have moderate beneficial impacts on air quality because biodegradable liquid copolymers can effectively reduce emissions, including hazardous air pollutants.

Fire Management and Energy & Minerals

Air quality impacts from fire management and energy and minerals would be negligible compared to the No Action Alternative, although there would be a minor long-term benefit to air quality from withdrawal of mineral entry on public lands in the Serpentine ACEC.

4.7.7.3 Mitigation

Air quality impacts under the Proposed Action would be mitigated by maintaining compliance with the National Ambient Air Quality Standards, NESHAPs, applicable California air quality regulations, and State Implementation Plans. Prescribed fire activities would be coordinated with the APCD charged with protecting air quality within the locale of the prescribed fire. Smoke management plans and/or permit applications would be prepared and submitted for approval, and smoke-dispersion models would be used as a tool to evaluate the potential for air quality impacts from fires on BLM public lands before conducting prescribed fires. Information provided by the model would also aid decision makers in determining potentially adverse impacts from prescribed fires, or wildland fires, and how to mitigate those impacts.

4.7.8 Cumulative Effects

The area of consideration for cumulative effects to air quality is based on the air districts that the CCMA is located within. The majority of the area is within the jurisdiction of the Monterey Bay Unified Air Pollution Control District (MBUAPCD). However, a small portion is within Fresno County, which is administered by the San Joaquin Valley APCD. The San Joaquin Valley APCD has some of the worst air pollution in the nation, especially when considering ozone and particulate matter. The San Joaquin Valley APCD is in non-attainment for the state air quality standard for 1-hour ozone levels; and the state and federal standards for 8-hour ozone levels, and PM_{10} and $PM_{2.5}$.

The North Central Coast Air Basin has better overall air quality, due to the marine weather influence, although the MBUAPCD is in non-attainment status for the state standard for ozone and PM_{10}. The annual air quality report for Monterey County attributes these ozone exceedances to transport pollution coming from the San Francisco Bay Area.

It is likely that continued growth within both the North Central Coast and the San Joaquin Valley air basins will contribute to continued poor air quality in urbanized areas. Stringent regulations and state implementation plans aimed at reaching attainment of air quality standards will contribute to improved air quality; however, reaching attainment goals is likely several years in the future.

The respective air districts managing air quality in the Planning Area have also developed air quality plans that govern development and air pollution-producing activities within each air district. These plans consider the cumulative effects of all air pollution sources on the overall air pollution levels within each district. The ultimate goal of these plans is to maintain compliance with an air quality standard or to achieve compliance with an air quality standard if the air district is not in compliance. BLM coordination with California Air Resources Board (CARB) and local APCD's would ensure cumulative effects on air quality from resource management actions (i.e. prescribed fires) do not exceed standards for primary and secondary air quality standards.

While air quality may remain bad in the surrounding San Joaquin Valley and contribute to transport pollution, BLM management actions within the CCMA would have little effect on regional air quality conditions. Management activities that produce harmful emissions are localized and limited in scope and duration. The undeveloped nature of the CCMA and surrounding areas contribute to low levels of pollution sources in the near vicinity. Nevertheless, public health and safety measures included in the range of alternatives to reduce human health risks, and compliance with federal and state air quality rules and regulations, would contribute to long-term beneficial cumulative impacts on the air quality in the North Central Coast and the San Joaquin Valley air basins.

4.7.8.1 Cumulative Effects for Alternative A, B, C, and D

Under these alternatives, land use authorizations for surface disturbing activities and BLM management actions during periods of high OHV recreation use would have adverse cumulative impacts on air quality, but the impacts would be localized to the CCMA. Impacts following high-use periods would dissipate within 48 to 72 hours depending upon weather conditions. These cumulative impacts would also be reduced as a result of restrictions to OHV riding during the dry season.

Besides vehicle emissions, particulate matter (PM_{10} & $PM_{2.5}$) are the major sources of impacts to air quality. San Benito and Fresno Counties are in non-attainment for PM_{10} with Clean Air Act NAAQS. However, particulate matter emissions are not expected to contribute to cumulative air quality impacts to Fresno or San Benito counties due to prevailing winds.

Overall, motorized vehicle use on unpaved routes would contribute some level to emissions inventories for the affected air basins, but the cumulative impacts would be negligible because recreation use levels are anticipated to remain near current levels with only slight increases over the life of this plan.

4.7.8.2 Cumulative Effects for Alternatives E, F, G, and the Proposed Acton

California State efforts to implement stricter motorized street-legal vehicle and off-road vehicle emissions standards for other pollutants associated with exhaust from motorized vehicles, including: reactive organic gases (ROG), nitrogen oxides (NOX), and carbon monoxide (CO) would lessen contributions for these emissions.

However, cumulative impacts of CCMA management and visitor use on air quality are considered negligible because of the short-term localized nature of the effects of air quality and prevailing winds. Therefore, reducing or eliminating the number of unpaved roads available for OHV use in the CCMA, would only have long-term beneficial cumulative impacts in the CCMA portion of both air basins.

Under Alternatives E, F, G, and the Proposed Action, motorized vehicle use on designated routes would contribute some level of emissions to inventories for the affected air basins, but the cumulative impacts would be much less than Alternatives A - D because recreation and visitor use levels would decrease substantially.

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4.8 Soil Resources

4.8.1 Introduction

The greatest soil disturbance activities within the CCMA include non-motorized recreation, motorized recreation, energy and mineral exploration, livestock grazing, and plant community restoration and fire management. As highlighted in Chapter 3.8, soil resources of the CCMA may be divided into two general soil types: 1) serpentine soils found upon the New Idria serpentine mass (within the ACEC), and 2) nonserpentine soils found upon nonserpentine rock types surrounding the serpentine mass (outside of the ACEC). The Serpentine ACEC consists almost entirely of serpentine soils, whereas the San Benito River, Condon, Cantua, and Tucker zones consist almost entirely of nonserpentine soils.

For the purpose of analysis: Soil types are grouped and analyzed as "serpentine soils" and "nonserpentine soils." Analysis of impacts to soil resources is focused upon the location and intensity of the activity with respect to these two general soil groups.

Chapter 2 describes the management actions for soil resources under all the management alternatives and the Proposed Action. Tables 4.8-1 through 4.8-10 provide an overview of the management actions that would affect soils and how disturbance under the range of alternatives and the Proposed Action would impact soil resources.

Table 4.8-1 Summary of soil resource management actions for: Soil disturbance by non-motorized recreation.

Alternative	**Impact:** Soil disturbance by non-motorized recreation	**Management action:** Erosion control
A No Action	Continued non-motorized recreation upon serpentine soils. Continued non-motorized recreation upon nonserpentine soils.	Maintain/enhance soil productivity. Install soil erosion control structures. Maintain routes. Prioritize closed areas for restoration. No disturbance on slopes in excess of 50%.
B	Reduced non-motorized recreation upon serpentine soils. Continued non-motorized recreation upon nonserpentine soils.	Same as Alternative A, plus: Restoration plan required for soils with poor restoration potential prior to soil disturbance.
C	Same as Alternative B.	Same as Alternative B.
D	Further reduced non-motorized recreation (relative to Alts. B and C) upon serpentine soils. Increased non-motorized recreation impacts upon nonserpentine soils.	Same as Alternative B.
E	Further reduced non-motorized recreation (relative to Alt. D) upon serpentine soils. Slight increase in non-motorized recreation impacts upon nonserpentine soils (relative to Alt. A).	Same as Alternative B.
F	Same as Alternative E.	Same as Alternative B.
G	No non-motorized recreation upon serpentine soils. Non-motorized recreation impacts upon nonserpentine soils similar to Alt. D.	Same as Alternative B, except: No disturbance on slopes in excess of 40%.

Alternative	**Impact:** Soil disturbance by non-motorized recreation	**Management action:** Erosion control
Proposed Action	Substantially reduced non-motorized recreation upon serpentine soils. Slight increase in non-motorized recreation impacts upon nonserpentine soils (relative to Alt. A).	Same as Alternative A, plus: Restoration plan required for soils with poor restoration potential prior to soil disturbance.

Table 4.8-2 Soil disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Soil disturbance by non-motorized recreation.

Soil type	Alternative						
	A	B	C	D	E	F	G
Serpentine	↔	↓	↓	↓↓	↓↓	↓↓↓	↓↓↓
Nonserpentine	↔	↔	↔	↑↑↑	↑	↑	↑
Predicted soil loss →	A >	B ~	C ~	D >	E >	F ~	G

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse). Predicted soil loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as B is approximately equal to C.

Table 4.8-3 Summary of soil resource management actions for: Soil disturbance by motorized recreation.

Alternative	**Impact:** Soil disturbance by motorized recreation	**Management action:** Erosion control
A No Action	Continued intensive motorized recreation upon serpentine soils. Limited motorized recreation upon nonserpentine soils.	Maintain/enhance soil productivity. Install soil erosion control structures. Maintain routes. Prioritize closed areas for restoration. No disturbance on slopes in excess of 50%.
B	Reduced motorized recreation upon serpentine soils. Limited vehicle use upon nonserpentine soils.	Same as Alternative A, plus: Restoration plan required for soils with poor restoration potential prior to soil disturbance.
C	Same as Alternative B.	Same as Alternative B.
D	Further reduced motorized recreation (relative to Alts. B and C) upon serpentine soils. Greatly increased motorized recreation upon nonserpentine soils.	Same as Alternative B.
E	Further reduced motorized recreation (relative to Alts. B and C) upon serpentine soils. Limited motorized recreation upon nonserpentine soils outside of ACEC.	Same as Alternative B.

Alternative	**Impact:** Soil disturbance by motorized recreation	**Management action:** Erosion control
F	No motorized recreation upon serpentine soils. Limited vehicle use upon nonserpentine soils.	Same as Alternative B.
G	No motorized recreation upon serpentine soils. Limited vehicle use upon nonserpentine soils.	Same as Alternative B, except: No disturbance on slopes in excess of 40%.
Proposed Action	Substantially reduced motorized recreation) upon serpentine soils. Limited motorized recreation upon nonserpentine soils outside of ACEC.	Same as Alternative A, plus: Restoration plan required for soils with poor restoration potential prior to soil disturbance.

Table 4.8-4 Soil disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Soil disturbance by motorized recreation.

Soil type	Alternative						
	A	B	C	D	E	F	G
Serpentine	↔	↓	↓	↓↓	↓↓	↓↓↓	↓↓↓
Nonserpentine	↔	↔	↔	↑↑↑	↑	↑	↑
Predicted soil loss →	A >	B ~	C ~	D >	E >	F ~	G

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse). Predicted soil loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as B is approximately equal to C.

Table 4.8-5 Summary of soil resource management actions for: Soil disturbance by energy and mineral exploration.

Alternative	**Impact:** Soil disturbance by energy and mineral exploration	**Management action:** Erosion control
A No Action	Continued energy and mineral exploration in serpentine and nonserpentine areas.	Maintain/enhance soil productivity. Install soil erosion control structures. No disturbance on slopes in excess of 50%.
B	Same as Alternative A.	Same as Alternative A, plus: Restoration plan required for soils with poor restoration potential prior to soil disturbance.
C	Same as Alternative A.	Same as Alternative B.
D	Same as Alternative A.	Same as Alternative B.
E	Energy and mineral exploration limited to nonserpentine areas outside of the ACEC.	Same as Alternative B.
F	Same as Alternative E.	Same as Alternative B.

Alternative	**Impact:** Soil disturbance by energy and mineral exploration	**Management action:** Erosion control
G	Same as Alternative E.	Same as Alternative B, except: No disturbance on slopes in excess of 40%.
Proposed Action	Energy and mineral exploration limited to nonserpentine areas outside of the ACEC.	Same as Alternative A, plus: Restoration plan required for soils with poor restoration potential prior to soil disturbance.

Table 4.8-6 Soil disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Soil disturbance by energy and mineral exploration.

Soil type	Alternative						
	A	B	C	D	E	F	G
Serpentine	↔	↔	↔	↔	↓↓↓	↓↓↓	↓↓↓
Nonserpentine	↔	↔	↔	↔	↔	↔	↔
Predicted soil loss →	A ~	B ~	C ~	D >	E ~	F ~	G

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial).Predicted soil loss within the CCMA based upon Alternatives: A~B~C~D>E~F~G. "A~B" reads as A is approximately equal to B. "D> E" reads as: D is greater than E, or E is less than D.

Table 4.8-7 Summary of soil resource management actions for: Livestock grazing.

Alternative	**Impact:** Livestock grazing	**Management action:** Erosion control
A No Action	Continued grazing within serpentine and nonserpentine areas.	Maintain/enhance soil productivity. Rangeland health monitoring is required.
B	Same as Alternative A.	Same as Alternative A.
C	Same as Alternative A.	Same as Alternative A.
D	Same as Alternative A.	Same as Alternative A.
E	Same as Alternative A.	Same as Alternative A.
F	Livestock grazing limited to only nonserpentine areas outside of the ACEC.	Same as Alternative A.
G	No livestock grazing within the CCMA.	Same as Alternative A.
Proposed Action	Same as Alternative A.	Same as Alternative A.

Table 4.8-8 Soil disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Livestock grazing.

Soil type	Alternative						
	A	B	C	D	E	F	G
Serpentine	↔	↔	↔	↔	↔	↓↓↓	↓↓↓
Nonserpentine	↔	↔	↔	↔	↔	↔	↓↓↓
Predicted soil loss →	A ~	B ~	C ~	D ~	E >	F >	G

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted soil loss within the CCMA based upon Alternatives: A~B~C~D~E~F>G. "A~B" reads as A is approximately equal to B. "F> G" reads as: F is greater than G, or G is less than F.

Table 4.8-9 Summary of soil resource management actions for: Plant community restoration and fire management.

Alternative	**Impact:** Plant community restoration and fire management	**Management action:** Erosion control
A No Action	Continued plant community restoration within disturbed serpentine and nonserpentine areas. Continued fire management activity within serpentine and nonserpentine areas.	Maintain/enhance soil productivity. Install soil erosion control structures. Maintain routes. Prioritize closed areas for restoration. No disturbance on slopes in excess of 50%.
B	Same as Alternative A.	Same as Alternative A, plus: Restoration plan required for soils with poor restoration potential prior to soil disturbance.
C	Same as Alternative A.	Same as Alternative B.
D	Same as Alternative A.	Same as Alternative B.
E	Same as Alternative A.	Same as Alternative B.
F	Same as Alternative A.	Same as Alternative B.
G	Same as Alternative A.	Same as Alternative B, except: No disturbance on slopes in excess of 40%.
Proposed Action	Same as Alternative A.	Same as Alternative A, plus: Restoration plan required for soils with poor restoration potential prior to soil disturbance.

Table 4.8-10 Soil disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Plant community restoration and fire management.

Soil type	Alternative						
	A	B	C	D	E	F	G
Serpentine	↔	↔	↔	↔	↔	↔	↔
Nonserpentine	↔	↔	↔	↔	↔	↔	↔
Predicted soil loss →	A ~	B ~	C ~	D ~	E ~	F ~	G
↔ = no change (existing condition). Predicted soil loss within CCMA based upon Alternatives: A~B~C~D~E~F~G. "A~B" reads as A is approximately equal to B.							

4.8.2 Overview of Impacts

The primary impact of concern for soil resources is erosion. Erosion is a function of four primary factors including precipitation (amount, intensity, and frequency), soil and bedrock permeability, slope, vegetative cover, and disturbance type and intensity. Erosion is a natural process, but it can be greatly accelerated by human impacts including motorized recreation, development (mining, roads, pipelines, buildings, fences), livestock grazing, and fire. Indirect impacts can result when eroded sediment is transported downstream.

The two general soil types as discussed in Chapter 3.8 in detail, include: 1) serpentine soils found upon the New Idria serpentine mass (within the ACEC), and 2) nonserpentine soils found upon nonserpentine rock types surrounding the serpentine mass (outside of the ACEC). Both serpentine and nonserpentine soil types within the CCMA have moderate to very severe erosion hazard due to their presence on steep slopes. Serpentine soil types are particularly susceptible to erosion due to their naturally sparse vegetative cover. Additionally, serpentine soil types are very slow to naturally revegetate as compared to nonserpentine soils due to their severe, adverse physical and chemical properties. This subsection provides an overview of impacts that occur under all alternatives. The background and overall impact assessment is provided here and, as needed, further analysis is provided for each alternative.

4.8.2.1 Soil Resources and Disturbance by Non-motorized Recreation

Non-motorized recreation activities including camping, hiking, hunting, and rockhounding can cause minor adverse impacts to soil resources. Of these activities, camping poses the greatest impact to soil resources since camping sites are repeatedly used. Most campsites with the CCMA are located at designated campgrounds and staging areas, however, there are several small, popular informal campsites scattered throughout the CCMA. Repeated use of campsites can result in localized soil compaction and erosion (adverse). Foot traffic activities such as hiking, hunting, and rockhounding tend to be dispersed and not result in measurable adverse impacts to soil resources. Most hiking and hunting activities tend to occur primarily outside of the ACEC which are more vegetated and support more game animals, whereas most rockhounding activities are focused within the ACEC where there is a wide variety of rare minerals that appeal to collectors.

4.8.2.2 Soil Resources and Disturbance by Motorized Recreation

OHV recreation activities and motorized vehicle access for recreation can cause soil compaction and increase erosion (adverse). Soil erosion and compaction can lead to decreases in soil fertility, water permeability and retention, and vegetative cover. These conditions may in turn cause secondary impacts

such as sedimentation of local watersheds. Currently, the majority of OHV activities within the CCMA are located within the serpentine ACEC. The ACEC contains large areas of naturally barren serpentine soils which are susceptible to erosion following disturbance. Due to the stressful soil conditions imposed by serpentine soils, they are slow to revegetate. Soils outside of the ACEC are comparatively more fertile and support a greater density of vegetation which recovers more rapidly following disturbance.

Soil compliance monitoring is conducted by an interdisciplinary team of HFO specialists using Rangeland Health Standards and Guidelines. The Standards and Guidelines apply to all land uses and not only livestock grazing. Variance from the Standards and Guidelines indicate that land health may be compromised and corrective management action may be required.

4.8.2.3 Soil Resources and Disturbance by Energy and Mineral Exploration Impacts

Energy and mineral development can result in long-term damage to- or permanent loss of soils (adverse). Soil disturbance from construction, is typically more intense compared to OHV (light vehicle) impacts due to the use of heavy equipment. Impacts to soil from transmission lines and staging areas may be temporary, with minor compaction and erosion, whereas impacts from building construction and open pit mining may be regarded as permanent as soil is removed down to bedrock.

Overall, the CCMA has moderate potential for mineral development. The New Idria serpentine mass is highly-mineralized and was historically, commercially mined for magnesite, chromite, cinnabar, and asbestos. The Gem mine, a privately-owned inholding within the CCMA, continues to mine and market benitoite. Most other mineral development within the CCMA has ceased due to depletion of near-surface marketable minerals and changing mineral markets and mineral regulation. The CCMA has moderate potential for energy development. Oil and gas development potential is very low as the New Idria serpentine mass which comprises 40% of the CCMA land area has no potential for fossil fuel resources. The remainder of the CCMA contains sedimentary formations which have not yielded significant oil and gas resources within the local area. Wind energy development has some potential as the CCMA contains some of the highest points in the Diablo Range. Under all alternatives, the San Benito Mountain Research Natural Area is withdrawn from energy and mineral development.

4.8.2.4 Soil Resources and Disturbance by Livestock Grazing Impacts

Livestock grazing has the potential to affect soils on the 14 grazing allotments located at least partially within the CCMA. Overgrazing by livestock may result in soil compaction and accelerated soil erosion (adverse). Therefore, soil integrity is an important component of rangeland health monitoring. Rangeland health monitoring is conducted by an interdisciplinary team of HFO experts using the BLM-approved monitoring approach. Variance from one or more of the standards may indicate that rangeland health has been compromised and corrective management action may be required in the form of revised management.

4.8.2.5 Soil Resources and Disturbance by Plant Community Restoration and Fire Management Impacts

Vegetation restoration is an important tool for restoring or improving function of degraded ecosystems (beneficial). Restoration has many different levels based on the initial condition of the ecosystem and the desired final condition of the ecosystem. Restoration of drastically-disturbed lands, such as mines and serpentine barrens may include erosion control and/or revegetation with native plant species which typically requires intensive soil amendment. The IPM plan for some noxious, invasive species includes prescribed fire. Restoration of climax plant communities such as decadent chaparral also involves prescribed fire. Although initial short-term restoration impacts may be detrimental to the ecosystem, the overall long-term effects are beneficial.

Although fire typically is beneficial to vegetation by controlling weeds (prescribed fire), removing dead vegetation, and promoting new growth of native species. It can however, have adverse effects on soils. Fire lines require the removal of fuels down to bare soil. This often requires the use of heavy equipment. Bare fire lines are often compacted and susceptible to erosion. Additionally, soil erosion may be accelerated after a wildfire within the burn area because the native vegetation was removed.

4.8.3 Impacts and Management Actions for Alternative A

4.8.3.1 Soil Disturbance by Non-motorized Recreation

Under Alternative A, non-motorized recreation would continue both inside and outside of the ACEC. Impacts associated with CCMA visitor camping would continue to be the greatest within the ACEC. As a result, serpentine soils within the ACEC, which are sparsely vegetated and susceptible to erosion, would continue to be disturbed, and have minor long-term impacts on erosion rates and sedimentation of local watersheds.

4.8.3.2 Soil Disturbance by Motorized Recreation

Under Alternative A, both highway-licensed and green sticker vehicle recreation and its impacts will continue to be concentrated within the ACEC. Impacts outside of the ACEC will continue to be minor as few designated open routes exist outside of the ACEC. As a result, serpentine soils within the ACEC, which are sparsely vegetated and susceptible to erosion, will continue to be disturbed. Motorized recreation disturbance and have major long-term impacts on erosion rates and sedimentation of local watersheds.

4.8.3.3 Soil Disturbance by Energy and Mineral Exploration

Under Alternative A, energy and mineral exploration will continue within serpentine (ACEC) and nonserpentine (outside of the ACEC) areas, resulting in soil impacts in both areas.

4.8.3.4 Livestock Grazing

Under Alternative A, livestock grazing will continue to be permitted both within and outside of the ACEC, resulting in minor adverse impacts to both serpentine and nonserpentine soils because of the currently low grazing intensity on CCMA public lands.

4.8.3.5 Plant Community Restoration and Fire Management

Under Alternative A, restoration of closed routes and degraded lands will continue both with and outside of the ACEC, resulting in impacts to both serpentine and nonserpentine soils. Control burns would continue to be used for fuels reduction and habitat improvement.

4.8.3.6 Mitigation

The mitigation measures incorporated into vegetation resource management actions described in Chapter 2 would have moderate long-term beneficial impacts on biological resources and water quality in CCMA.

4.8.4 Impacts and Management Actions for Alternative B

4.8.4.1 Soil Disturbance by Non-motorized Recreation

Under Alternative B, non-motorized recreation will continue both within and outside of the ACEC. Visitor use within the ACEC will be limited to ≤ 12 days. Camping impacts will continue to be the greatest within the ACEC, as associated with OHV user camping, but will be reduced relative to Alternative A due to visitor use limitations. As a result, there would be a minor decrease (beneficial) of non-motorized recreation impacts to serpentine soils as compared to Alternative A. Non-motorized recreation location and intensity outside of the ACEC would be unchanged and therefore non-motorized recreation impacts to nonserpentine soils would be unchanged as compared to Alternative A.

4.8.4.2 Soil Disturbance by Motorized Recreation

Under Alternative B, motorized recreation of each visitor within the ACEC would be limited to ≤ 12 days per year and motorized vehicle use would be restricted to outside of the proposed Dry Season Use Restriction period of April 15th through December 1st (extended 45 days compared to the current Dry Season Use Restriction period). As a result, there would be a minor decrease (beneficial) of motorized recreation impacts to serpentine soils as compared to Alternative A. Motorized recreation location and intensity outside of the ACEC would be unchanged and therefore motorized recreation impacts to nonserpentine soils would be unchanged as compared to Alternative A.

4.8.4.3 Soil Disturbance by Energy and Mineral Exploration

Same as Alternative A.

4.8.4.4 Livestock Grazing

Same as Alternative A.

4.8.4.5 Plant Community Restoration and Fire Management

Same as Alternative A.

4.8.4.6 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives B, C, and D, and include best management practices outlined in Appendix V.

4.8.5 Impacts and Management Actions for Alternative C

4.8.5.1 Soil Disturbance by Non-motorized Recreation

Impacts for Alternative C would be similar to those for Alternative B with visitor use restrictions. As a result, impacts to both serpentine and nonserpentine soils would be unchanged as compared to alternative B.

4.8.5.2 Soil Disturbance by Motorized Recreation

Impacts for Alternative C would be similar to those for Alternative B. Motorized recreation would be subject to the same restrictions as Alternative B with the added restriction of only highway-licensed vehicles being permitted on county roads and the dry season route network and green-sticker motorcycle use being permitted only on single track trails. This is the same general use pattern for vehicles on routes (full-sized vehicles on roads; motorcycles on single-track trails) that currently exists, so the amount of

disturbance on serpentine soils would be expected to be about the same as Alternative B. Like Alternative B, motorized recreation location and intensity outside of the ACEC would be unchanged and therefore, vehicle recreation impacts to nonserpentine soils outside of the ACEC would be unchanged.

4.8.5.3 Soil Disturbance by Energy and Mineral Exploration

Same as Alternative A.

4.8.5.4 Livestock Grazing

Same as Alternative A.

4.8.5.5 Plant Community Restoration and Fire Management

Same as Alternative A.

4.8.5.6 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives B, C, and D, and include best management practices outlined in Appendix V.

4.8.6 Impacts and Management Actions for Alternative D

4.8.6.1 Soil Disturbance by Non-motorized Recreation

Alternative D represents a major shift in non-motorized recreation activities from inside to outside of the ACEC as new staging areas and campgrounds are established outside of the ACEC. With increased motorized recreation staging outside of the ACEC, there will be a major increase (adverse) in OHV users camping outside of the ACEC. Likewise, improved access to hunting areas and improved camping opportunities outside of the ACEC will likely encourage more hunters to camp in those areas outside of the ACEC as well. As a result, there would be an even greater reduction (beneficial) of non-motorized impacts to serpentine soils within the ACEC as compared to Alternative C and a major increase in non-motorized impacts to nonserpentine soils outside of the ACEC as compared to Alternative C.

4.8.6.2 Soil Disturbance by Motorized Recreation

Alternative D represents a major shift in the location of motorized recreation from inside to outside of the ACEC. Under Alternative D, motorized recreation within the ACEC would be restricted to only full-size vehicles on the designated route network. All green sticker vehicle recreation would be relocated to outside of the ACEC. New staging areas and routes would be constructed upon nonserpentine soils in the Tucker, Cantua, and Condon zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The route would be open to full-size vehicles and ATV/UTVs to access Condon Peak for both motorized and non-motorized recreation. The result would be an even greater reduction (beneficial) of motorized recreation impacts to serpentine soils within the ACEC as compared to Alternative C, and a major increase in motorized recreation impacts to nonserpentine soils outside of the ACEC as compared to all other alternatives.

4.8.6.3 Soil Disturbance by Energy and Mineral Exploration

Same as Alternative A.

4.8.6.4 Livestock Grazing

Same as Alternative A.

4.8.6.5 Plant Community Restoration and Fire Management

Same as Alternative A.

4.8.6.6 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives B, C, and D, and include best management practices outlined in Appendix V.

4.8.7 Impacts and Management Actions for Alternative E

4.8.7.1 Soil Disturbance by Non-motorized Recreation

Non-motorized recreation under Alternative E is further reduced as visitor use continues to be limited within the ACEC and less new routes are constructed outside of the ACEC as compared to Alternative D. Camping impacts will be reduced as compared to Alternative D as it is expected that there would be fewer OHV users and hunters. Under Alternative E, non-motorized recreation impacts to serpentine soils within the ACEC would be similar to Alternative D. Non-motorized impacts to nonserpentine soils outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

4.8.7.2 Soil Disturbance by Motorized Recreation

Under Alternative E, vehicle use within the ACEC would be similar to Alternative D, although highway-licensed vehicles rather than full-size vehicles would be restricted to a scenic route network composed of T153 and R11, which would allow street-legal motorcycles on the designated route. Motorized recreation outside of the ACEC would be slightly increased (adverse) as compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) on nonserpentine soils in the Tucker, Cantua, Condon, and San Benito River zones. A new route would be constructed from the Condon Peak BLM access point on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to both highway-licensed vehicles and green sticker ATVs to access Condon Peak for non-motorized recreation only. Since soil impacts from the construction of these few new routes are expected to be short term, and soil impacts from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine soils outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

4.8.7.3 Soil Disturbance by Energy and Mineral Exploration

Under Alternative E, energy and mineral exploration would only be permitted outside of the ACEC. As a result, impacts to serpentine soils within the ACEC from energy and mineral exploration would cease. Energy and mineral exploration impacts to nonserpentine soils outside of the ACEC would continue.

4.8.7.4 Livestock Grazing

Same as Alternative A.

4.8.7.5 Plant Community Restoration and Fire Management

Same as Alternative A.

4.8.7.6 Mitigation

Mitigation measures included in the management actions under the range of alternatives in Chapter 2 and BMPs outlined in Appendix V would have major long-term benefits for soils and watershed resources in CCMA because of major reductions in surface disturbing activities and increased emphasis on resources protection and restoration.

4.8.8 Impacts and Management Actions for Alternative F

4.8.8.1 Soil Disturbance by Non-motorized Recreation

Non-motorized recreation under Alternative F would be similar to Alternative E for use both within and outside of the ACEC. As such, non-motorized recreation impacts to serpentine soils within the ACEC and nonserpentine soils outside of the ACEC would be similar to Alternative E.

4.8.8.2 Soil Disturbance by Motorized Recreation

Under Alternative F, motorized recreation within the ACEC would not be permitted. Clear Creek Road (R1) would be decommissioned. As a result, there would be a major reduction (beneficial) of motorized recreation impacts to serpentine soils within the ACEC as compared to Alternative A. Motorized recreation outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes (approximately 15 miles) on nonserpentine soils in the Tucker, Cantua, and Condon zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to both highway-licensed vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Since impacts to soil from the construction of these few new routes are expected to be short term, and impacts to soil from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine soil resources outside of the ACEC would be similar to Alternative E.

4.8.8.3 Soil Disturbance by Energy and Mineral Exploration

Same as Alternative E.

4.8.8.4 Livestock Grazing

Under Alternative F, livestock grazing would only be permitted outside of the ACEC. As a result impacts to serpentine soils within the ACEC from grazing would cease (beneficial). Grazing impacts to nonserpentine soils outside of the ACEC would continue.

4.8.8.5 Plant Community Restoration and Fire Management

Same as Alternative A.

4.8.9 Impacts and Management Actions for Alternative G

4.8.9.1 Soil Disturbance by Non-motorized Recreation

Under Alternative G, non-motorized recreation within the ACEC would not be permitted. As a result, non-motorized recreation impacts to serpentine soils within the ACEC would cease (beneficial). Similar to Alternative F, non-motorized recreation outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes on nonserpentine soils in the Tucker, Cantua, Condon, and San Benito River zones. As such, non-motorized recreation impacts to nonserpentine soils outside of the ACEC would be similar to Alternative F.

4.8.9.2 Soil Disturbance by Motorized Recreation

Under Alternative G, motorized recreation within the ACEC would not be permitted. Clear Creek Road (R1) would not be decommissioned. As a result, impacts to serpentine soils from motorized recreation within the ACEC would be reduced slightly less so than Alternative F due to the fact that Clear Creek Road would not be decommissioned. Vehicle use outside of the ACEC would be slightly increased compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) on nonserpentine soils in the Tucker, Cantua, Condon, and San Benito River zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Since soil impacts from the construction of these few new routes are expected to be short term, and soil impacts from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine soil resources outside of the ACEC would be similar to Alternatives E and F.

4.8.9.3 Soil Disturbance by Energy and Mineral Exploration

Same as Alternative E.

4.8.9.4 Livestock Grazing

Under Alternative G, livestock grazing would not be permitted within the CCMA. As a result impacts to serpentine soils within the ACEC and nonserpentine soils outside of the ACEC would cease (beneficial).

4.8.9.5 Plant Community Restoration and Fire Management

Same as Alternative A.

4.8.10 Impacts to Soil Resources for the Proposed Action

4.8.10.1 Soil Disturbance by Motorized and Non-motorized Recreation

Under the Proposed Action, non-motorized recreation would continue both within and outside of the ACEC. However, non-motorized recreation under the Proposed Action would be further reduced (beneficial) as visitor use continued to be limited within the ACEC, resulting in moderate long term beneficial impacts to serpentine soils. Camping impacts within the ACEC would see a major long term reduction (beneficial) benefitting serpentine soils resources.

The Proposed Action represents a moderate shift in non-motorized recreation activities from inside to outside of the ACEC as new access points and campgrounds are established outside of the ACEC. Likewise, improved access to hunting areas and improved camping opportunities outside of the ACEC will likely encourage more hunters to camp in those areas outside of the ACEC as well. As a result, there would be an even greater reduction of non-motorized recreation impacts to serpentine soil resources within the ACEC. Serpentine soils within the ACEC, which are sparsely vegetated and susceptible to erosion, would see moderate long-term beneficial impacts on erosion rates and sedimentation of local

watersheds. It is likely there would be a moderate increase in camping outside of the ACEC (adverse) and a corresponding moderate increase in non-motorized recreation impacts to nonserpentine soil resources outside of the ACEC.

Under the Proposed Action, motorized recreation within the ACEC would be limited to highway-licensed vehicles restricted to a *Scenic Touring Route.* The substantial limitations and reduction of routes within the ACEC would represent major long term reduction in impacts to serpentine soil resources and erosion. Motorized recreation outside of the ACEC would be slightly increased (adverse) as compared to the No Action Alternative, due to the development of a limited number of access routes through nonserpentine soils in the Tucker, Cantua, Condon, and San Benito River Zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to highway-licensed vehicles and ATV/UTVs to access Condon Peak for motorized and non-motorized recreation. Since soil impacts from the construction of these few new routes outside of the ACEC are expected to be short term, and soil impacts from their use as access routes are expected to be minimal; overall motorized recreation impacts to nonserpentine soils outside of the ACEC would be short term minor adverse impacts.

4.8.10.2 Soil Disturbance by Travel and Transportation Management

During the mid-90's, BLM funded research and field studies on the roads and trails network in the CCMA for two major watershed and geomorphic studies to evaluate road related erosion and sediment problems for over 100 miles of roads and trails in the CCMA and to determine which barrens are at most risk due to accelerated erosion which delivers increased sediment to surface water.

The 1998 Pacific Watershed Associates (PWA) report identified the portion of the CCMA route network having erosion and sediment problems and also recommended specific engineered treatments at selected problem locations. This report further characterized that 40% of the accelerated erosion was related due to poor road design and lack of maintenance and recommended that 9 miles of major roads be re-shaped to reduce sediment from entering into Clear Creek and other surface water.

BLM instituted a few of the of the remedies on the Clear Creek road network, such as rolling dips, box culverts and a major concrete stream crossing across the San Benito River. The PWA report also recommended closure and restoration of many roads and trails. BLM also implemented many of these recommendations, such as a major re-route around the Aurora Grade and closure of Sawmill Creek road, which were associated with the county route network.

Since 1996, BLM has been recording sedimentation along Clear Creek by contracting with the U.S. Geological Survey (USGS). As part of this BLM funded project ($60,000 per year) sediment yields have been measured annually. Based upon BLM's watershed and geomorphic studies along with the USGS stream gauging measurements the sediment contribution associated with the county un-maintained road system can be accurately estimated.

The PWA report estimated that stream crossings accounted for about 8,500 cubic yards of increased sediment, road segments accounted for about 2,250 cubic yards of increased sediment, individual problem sites (needing spot treatments) accounted for about 2,500 cubic yards of increased sediment. PWA's report also identified that natural background erosion such as landslides, cut bank and stream bank erosion accounted for about 5,000 cubic yards. PWA's report concluded that about 40% of all erosion within this watershed was associated with improperly constructed and maintained roads.

Under the Proposed Action, reclamation or restoration of closed roads in the Serpentine ACEC on routes with stream crossings, or other areas with high potential for sedimentation of waterways would have the

potential to create moderate to major long-term beneficial impacts to water resources through decreased soil erosion, vehicle-related contaminant introduction to water bodies, and enhanced watershed functions.

4.8.10.3 Soil Disturbance by Energy and Mineral Exploration

Under the Proposed Action, energy and mineral exploration would only be permitted outside of the ACEC. As a result, impacts to serpentine soils within the ACEC from energy and mineral exploration would cease and provide long term moderate beneficial impacts. There is a potential for energy and mineral exploration impacts to nonserpentine soil resources outside of the ACEC, however as the potential for such development is low, it is unlikely.

4.8.10.4 Soil Disturbance by Livestock Grazing

Under the Proposed Action, livestock grazing would continue to be permitted both within and outside of the ACEC, resulting in minor adverse impacts to both serpentine and nonserpentine soils because of the currently low grazing intensity on CCMA public lands.

4.8.10.5 Soil Disturbance by Plant Community Restoration and Fire Management

Under the Proposed Action, restoration of closed routes and degraded lands would continue both within and outside of the ACEC, resulting in moderate long term beneficial impacts to serpentine soils and nonserpentine soil resources.

4.8.10.6 Mitigation

Mitigation measures included in the management actions under the Proposed Action in Chapter 2 and Best Management Practices outlined in Appendix V, would have major long-term benefits for soils and watershed resources in CCMA because of major reductions in surface disturbing activities and increased emphasis on resources protection and restoration.

4.8.11 Cumulative Effects

Cumulative impacts from management actions under other resource programs would vary depending on the alternative selected. Since many activities can affect soil erosion, the cumulative impact resulting from management actions under other resource programs can vary greatly. With increases or decreases in soil disturbance, soil-specific management actions including erosion control and revegetation, would also be increased and decreased, and focus of those actions may shift from inside the ACEC to outside of the ACEC as determined by visitor use patterns under each management alternative.

Alternatives A, B, C, and D would have more adverse cumulative effects on soils than Alternatives E, F, G, and the Proposed Action because they would emphasize maintenance and development of extensive roads and trails for motorized OHV recreation opportunities. Alternatives E, F, G, and the Proposed Action would not have any adverse cumulative effects to soils resources because they would incrementally decrease soil disturbance from visitor use and resource management activities to emphasize public health and safety and non-motorized recreation opportunities. Soil-specific management actions including erosion control and revegetation would result in beneficial cumulative effects from overall reductions in soil loss and sediment delivery to the San Benito River and Clear Creek watersheds. The focus of those soil-specific management actions may shift from inside the ACEC to outside of the ACEC as determined by visitor use patterns.

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4.9 Water Resources

For ease of reference, the management goals from Chapter 2 are reiterated here:

- The goals for water resources management are to (1) maintain, restore, or improve water quality and quantity to sustain the designated beneficial uses on BLM lands and (2) ensure that surface and groundwater quality comply with the Clean Water Act (CWA) and with California State standards.

4.9.1 Introduction

Management decisions can impact water quality, water quantity, and availability of water for multiple uses, as well as the watershed Proper Functioning Condition (PFC) for both surface water and groundwater. Water resource management must take into account both intra- and inter-resource relationships. Impacts to water quality analyzed in this section are based on management actions described in the range of alternatives and the Proposed Action for recreation, transportation, fire management, livestock grazing, energy and minerals development, and resource protection measures identified for soil resources.

4.9.2 Overview of Impacts

Water resource management decisions generally focus on actions that maintain, restore, or improve water quality and quantity to sustain the designated beneficial uses on BLM lands and ensure that surface and groundwater comply with the U.S. Clean Water Act and California State standards. Other management actions have the potential to impact water resources through the implementation of various resource programs, as described below.

4.9.2.1 Water Resources Management Actions

The management actions specified for water resources focus on protecting water quality, maintaining or enhancing overall watershed function, and managing water availability on BLM lands for an array of users.

4.9.2.2 Other Management Actions

The following resource programs have the potential to impact water resources:

Recreation & Travel and Transportation Management

Development and use of recreational roads and trails can affect water quality through sediment-laden runoff and the introduction of contaminants to surface waters.

Fire Management

The frequency and location of prescribed fires and methods in which prescribed fires and wildfires are suppressed can impact water quality through increased overland flow and resulting sedimentation and introduction of chemical contaminants to water bodies. Fire suppression activities can affect watershed function by destruction of riparian vegetation. Introduction of noxious weeds following wildfires can also adversely affect watershed function.

Livestock Grazing

Livestock grazing can affect watershed function by creating plant diversity and improved vegetation cover. Overgrazing can lead to soil compaction, reduced vegetative cover, and increased sediment transport to streams.

Energy and Minerals

Development of oil and gas drilling sites and minerals extraction sites can impact water quality through sedimentation and accidental introduction of contaminants. Energy and minerals development can also impact groundwater quality and quantity. Energy and minerals development can impact water availability to downstream users if extraction operations divert water from aquatic resources.

Development of new roads and rights-of-ways can impact water quality through increased erosion and sedimentation of surface waters.

4.9.3 Impacts and Mitigation for Alternative A

4.9.3.1 Water Resource Management Actions

Management actions affecting water quality serve to improve or protect water resources from siltation and sedimentation from road and trail development and maintenance. These actions would have a beneficial impact to water resources because they meet the Alternative A goal of maintaining/enhancing water quality.

Watershed Function

Under Alternative A, best management practices (BMPs) are established to guide watershed enhancement and stabilization measures where needed, representing a beneficial impact to water resources because this action serves to meet the goal of enhancing water quality, a primary watershed health indicator.

Many of these management practices have been implemented over the years. BLM does not propose to have funds available to implement all referenced management practices. The continuing priority in the short term is to provide for protection of unstable areas, minimize sediment production, protect water quality by minimizing soil erosion, and ensure that constructed erosion control structures are stabilized and working. Of primary concern are management practices to reduce impacts from motorized travel on roads in CCMA, which have been identified as a significant source of airborne asbestos emissions and excess lifetime cancer risks for CCMA visitors, as identified in the Environmental Protection Agency's Asbestos Exposure and Human Health Risk Assessment (2008). Erosion related to vehicle use on roads and barrens is also a contributor of sediment yield above background erosion rates in the CCMA watersheds. Minimizing dust emissions and erosion on routes and barrens, involving surface hardening, dust suppression, control of drainage, road slope stabilization, slope design, stream crossings, stream course protection, and seasonal use restrictions the extreme weather conditions are critical components to improving watershed conditions and overall protection of human health and the environment.

Water Availability

Alternative A contains management actions that allow BLM to control water diversions by land permittees or lessees through the establishment of Federal reserved water rights. This alternative does allow for public water withdrawals from BLM lands through the State water right appropriation process; however, BLM also retains control of how water can be diverted from aquatic systems on BLM lands through the right-of-way approval process for water transmission infrastructure. These actions have an

overall beneficial impact on ensuring water is available for watershed function and habitat value in riparian areas, while also allowing for water withdrawal for approved uses in the Planning Area. This alternative meets the goal of increasing water availability to meet resource needs.

4.9.3.2 Other Management Actions

Recreation & Travel and Transportation Management

The no action alternative would continue to allow OHV use on 242 miles of unpaved roads and trails and 478 acres of barren play areas. Impacts related to OHV use of the barrens would be limited to the Clear Creek watershed. By reducing unauthorized uses, eliminating vehicle access to abandoned mine lands and completing significant road improvements and abandoned mine remediation projects, the BLM would minimize the potential for impacts to water quality.

The extent of the contribution of heavy metals and asbestos into the Hernandez Reservoir remains an issue, and some continued natural contribution of mercury and asbestos may be unavoidable. Water sampling data through 2002 indicates a possible overall slight downward trend in mercury concentrations in Clear Creek. However data from 2004/2005 indicates exceedance of the numeric objective for mercury in Clear Creek.

The available data indicate that the San Benito River is currently meeting water quality objectives for mercury. The data also indicate that Hernandez Reservoir is currently meeting water quality objectives for mercury (1998 data); however, mercury in fish tissues is at levels which do not meet stated objectives. The Central Coast Regional Board's Technical Report[6] indicates that sediment loading into the creek is roughly at background levels throughout most of the Clear Creek watershed, which suggests that the OHV activities are not causing any significant mercury loading. Based on both the water and sediment data collected by the Regional Board, it appears that high-use OHV areas are not a significant source of mercury loading.

Though some recent actions by BLM appear to have implemented the mercury-loading controls necessary to achieve the TMDL, Clear Creek is not yet fully attaining standards. Therefore BLM has committed to the Regional Board a five year program of quarterly sampling and monitoring. The Regional Board has not requested any additional implementation efforts as the remedial actions of BLM appear to be causing a decrease in sediment concentrations of mercury in Clear Creek. Achieving the load allocations in Clear Creek is reasonably expected to achieve the load allocations in Hernandez Reservoir and restore beneficial uses of the reservoir.

Fire Management

Fire management actions under Alternative A are intended to improve range conditions and for fuels reduction. These prescribed burns are conducted on intervals of decades. With appropriate suppression controls and the BMPs that will be implemented to protect water quality during prescribed or wild fires, BLM's fire management actions would have a negligible adverse impact on water resources because the goal to maintain/enhance water quality could be compromised on a localized basis during fire suppression efforts around aquatic systems.

[6] Central Coast Regional Water Quality Control Board, Staff Report; *Total Maximum Daily Load, Technical Support Analysis for Mercury Impairment of Clear Creek and Hernandez Reservoir,* March 10, 2004.

Livestock Grazing

Alternative A includes actions for protecting springs from livestock trampling and establishing grazing seasons to protect other resources, including water resources. These are beneficial impacts to water resources because it meets the goal of enhancing water quality. Alternative A includes 156,152 acres of allotted grazing lands, the least amount of acreage of the four alternatives. Some of these grazing lands are located in proximity to surface waters in the Planning Area, so this management action represents a minor potential adverse impact to water resources from overgrazing in upland areas adjacent to water bodies. Finally, Alternative A ensures that livestock watering developments will be managed to provide safe drinking water for wildlife. This action is a beneficial impact to water availability for wildlife needs because it meets the goal of increasing water availability to meet resource needs.

Energy and Minerals

Alternative A allows for energy and mineral development throughout the Planning Area, as long as development protects rare, threatened, and endangered species and paleontological resources, and meets the principals of multiple-use management of BLM-administered lands, including the protection of water resources. Since oil and gas leases and mining plans of operation are required to address protection of water resources, energy and minerals actions would meet the goal of maintaining water quality and would therefore have no adverse impact on water resources.

4.9.3.3 Mitigation

Mitigation measures are included within the management actions identified in Chapter 2. Management actions prescribed for Alternative A that serve as mitigation measures would include seasonal closures to activities that can affect water quality, as determined on a case-by-case basis; monitoring water quality and soil loss/sedimentation; and implementing BMPs as determined on a case-by-case basis.

4.9.4 Impacts and Mitigation Common to Alternatives B, C, D, and E

4.9.4.1 Water Resources Management Actions

Water Quality

Under Alternatives B, C, D, and E common management actions are listed that aim to protect water quality in the Planning Area, including the use of BMPs in activity plans, and management of water bodies to meet Clean Water Act objectives through total maximum daily load pollutant allowances and other water quality standards. These actions would result in beneficial, long-term impacts to water quality in the Planning Area because they would improve water quality by complying with the Total Maximum Daily Loads of pollutants in Clear Creek and San Benito River. Compared to Alternative A, the actions common to Alternatives A, B, and C represent a more defined and proactive approach to protecting water quality in the Planning Area.

Watershed Function

Alternatives B, C, D, and E have common management actions that serve to protect watershed function through restoration projects and coordination with other resource management groups to protect water bodies. These actions would have a beneficial, long-term impact on watershed function, similar to the beneficial impacts stated under Alternative A, because they meet the goal of improving water quality to sustain beneficial uses.

Water Availability

Alternatives B, C, D, and E common management actions include provisions for maintaining spring developments and reservoirs, and maintaining existing adjudicated water rights in the Planning Area. These actions would result in generally beneficial impacts to water availability because they meet the goal of maintaining water quantity in the Planning Area.

4.9.4.2 Other Management Actions

Recreation & Travel and Transportation Management

Under Alternatives B, C, and D, allowable uses and BLM management actions are proposed to provide for off-highway vehicle use, as well as other non-motorized recreation opportunities. Most of these actions would result in beneficial impacts to water resources because they meet the goal of maintaining and improving water quality. In particular, dust suppression and surface hardening techniques on 25-30 miles of major roads and reducing soil disturbing activities on abandoned mine lands would contribute to reducing off-site transport of metals and asbestos and have major long-term benefits on water quality in the CCMA watersheds.

Under Alternative D, management actions specify increasing and/or improving motorized access to CCMA public lands outside of the ACEC for recreation opportunities. These new access developments and improvements could result in increased sediment runoff to water bodies, which would represent a short-term minor adverse impact to water resources because water quality could be compromised in specific locations. However, Alternatives B, C, D, and E also contain provisions for restricting motorized access by vehicle type and incorporate route designation criteria that would minimize the introduction of sediments or contaminants into water bodies and prevent destruction of riparian habitat by recreational vehicle use. Thus, these Alternatives would have negligible impacts to water resources compared to the existing conditions described in Chapter 3.

As additional data becomes available, this information will be valuable in monitoring the implementation of management actions, to determine whether restricting use in mine areas and reducing the miles of routes available for vehicle use, is having the desired effect of reducing contaminated sediment delivery downstream. The Aurora Mine site area would be completely closed between the Aurora grade and SBMRNA reducing soil disturbance and the potential for off-site transport of contaminants.

Alternative E would reduce the miles of available routes in the Larious and San Carlos watershed where the highest levels of background concentrations of hazardous metals are present, thereby reducing the potential for human exposure and contaminated sediment delivery. Additional routes accessing the following mine areas (Chromium, Mercury, Asbestos) would be closed: Larious watershed – Larious, Sampson, Spanish, and Wonder Mines; San Carlos watershed – San Carlos and Molina Mine; Cantua watershed – Del Mexico, Anita, Sec. 28 asbestos, and Coalinga asbestos Mines; San Benito watershed – Big Ridge Mine; White Creek watershed – Big Ridge, Tromby, Archer, Byles, and Butler Mines. Any motorized OHV use on highly erosive areas such as barren slopes and on unpaved roads and trails, would disturb soils containing hazardous metals, and increase erosion and transport of sediment above natural background levels. Closure of routes accessing these mines and a corresponding reduction in soil disturbance from OHV's at these areas, would contribute to improvements in water quality by reducing the potential for contaminated sediment delivery.

In general, under Alternative E designated beneficial water uses identified for streams associated with the CCMA would be enhanced through a reduction in miles of routes and acres of barrens available for OHV use, reductions in stream crossings, and implementation of Best Management Practices to minimize watershed impacts. Considering estimates that nearly half the sediment delivered to streams within the

CCMA come from stream and swale crossings, the vast reduction in the number of crossings should result in substantial reductions in sediment delivery. This information will assist in evaluating the effectiveness of route designation & barren area closures, along with other watershed restoration projects.

Fire Management

Fire management actions common to Alternatives B, C, D & E include coordination efforts with the CALFIRE to minimize environmental damage, including damage to water resources, from fire suppression efforts. Wildland fire suppression and the use of prescribed fire or mechanical treatments would be managed to prevent adverse impacts to vernal pools and other waterways. These actions would have a beneficial impact to water quality and watershed function by controlling the introduction of sediment-laden suppression waters and/or chemical retardants into water bodies. These actions would have a positive long-term effect on water resources described in Chapter 3.

Livestock Grazing

Alternatives B, C, D, and E include common management actions that would allow BLM to make lands unavailable for livestock grazing if water resources were being degraded by grazing practices. They also would allow for fencing of spring developments to prevent trampling by livestock. These actions would result in beneficial impacts to water resources because they meet the goal of maintaining and improving water quality. These actions would have a positive long-term effect on water resources described in Chapter 3.

Energy and Minerals

Energy and minerals management actions under Alternatives B, C, D, and E for energy and minerals would have negligible impacts on water resources described in Chapter 3.

4.9.4.3 Mitigation

Mitigation measures are built into the management actions in Chapter 2. Mitigation measures common to Alternatives B, C, D, and E include management actions that include use of BMPs, restricting certain uses that degrade water quality, and periodic monitoring of water quality. These mitigation measures would have a positive long-term effect on water resources described in Chapter 3.

4.9.5 Impacts and Mitigation for Alternative F and G

4.9.5.1 Water Resource Management Actions

Water Quality and Watershed Function

Under Alternatives F and G, all fluvial systems would be managed to meet PFC. This action is the most environmentally protective measure of the alternatives because it addresses all water bodies in the Planning Area. This alternative would have a beneficial and long-term impact because it meets the goal of improving water quality.

Water Availability

Alternatives F and G contain management actions that allows BLM to file for Federal reserved water rights on acquired lands. This action has an overall beneficial impact on ensuring water is available for watershed function and habitat value in riparian and upland areas because it meets the goal of maintaining water quantity for beneficial uses. It does not afford specific opportunities for private entities to acquire

water rights on BLM managed lands, which would represent a minor adverse impact to permittees or lessees wishing to divert water for various developments or grazing purposes.

4.9.5.2 Other Management Actions

Recreation & Travel and Transportation Management

Under Alternatives G all recreation activities in the Serpentine ACEC would be prohibited, including off-highway vehicle recreation, which would decrease the chance of adverse visitor impacts on riparian areas. These actions would result in beneficial impacts to water resources because they help meet the goal of maintaining and improving water quality.

Management actions to restore roads that no longer serve their original purpose, prohibit public use within the ACEC would serve to protect water quality and watershed function, and overall would minimize or eliminate adverse impacts on water resources from vehicle use. However, foot traffic in the ACEC and travel routes cross steams or riparian habitat outside of the ACEC under Alternatives F and G could have minor localized impacts to water resources described in Chapter 3.

Fire Management

Under Alternatives F and G, approximately 1,450 acres in the Planning Area would be targeted for annual prescribed burns, and 12,500 acres for decadal prescribed burns. Approximately 3,350 acres would also be targeted for mechanical treatments to control wildfire fuels on a decadal basis. These acreages are greater than the current management strategy for fire management (Alternative A), and could result in minor to moderate adverse impacts to water resources from the introduction of sediment-laden suppression water and/or chemical retardants to water bodies in proximity to treated areas. This alternative would temporarily not meet the goal for maintaining water quality on a localized basis.

Livestock Grazing

Alternative G includes 43,397 acres of allotted grazing lands, approximately 70 percent less area than Alternative A. Some of these grazing lands are located in proximity to surface waters in the Planning Area, so this management action represents a moderate to major potential beneficial impact to protect water resources from overgrazing in upland areas adjacent to water bodies.

Energy and Minerals

Under Alternatives G, all CCMA public lands would be closed to all energy and mineral development, which would serve to protect water quality and watershed function, and would be considered a moderate long term beneficial impacts to water resources described in Chapter 3.

4.9.5.3 Mitigation

Mitigation measures are built into the management actions in Chapter 2. Mitigation measures under Alternatives F and G are the same as Alternatives B, C, D, & E, and include use of BMPs, restricting certain uses that degrade water quality, and periodic monitoring of water quality. These mitigation measures would have a positive long-term effect on water resources described in Chapter 3.

4.9.6 Impacts to Water Resources for the Proposed Action

4.9.6.1 Water Resource Management Actions

Water Quality

Under the Proposed Action, management actions are identified that function to protect water quality in the Planning Area, including the use of BMPs in activity plans, and management of water bodies to meet Clean Water Act objectives through total maximum daily load pollutant allowances and other water quality standards. These actions would result in beneficial, long-term impacts to water quality in the Planning Area because they would improve water quality by complying with the Total Maximum Daily Loads of pollutants in Clear Creek and San Benito River. Management actions affecting water quality serve to improve or protect water resources from siltation and sedimentation from road and trail development and maintenance. In general, the identified management actions represent a more defined and proactive approach to protecting water quality in the Planning Area, as compared to the No Action Alternative, and contribute to meeting the goal of maintaining/enhancing water quality.

Watershed Function

Best management practices (BMPs) are established to guide watershed enhancement and stabilization measures where needed, representing a beneficial impact to water resources because this action serves to meet the goal of enhancing water quality, a primary watershed health indicator. Under the Proposed Action, management actions serve to protect watershed function through restoration projects and coordination with other resource management groups to protect water bodies. These actions would have a beneficial, long-term impact on watershed function, similar to the beneficial impacts stated under the No Action Alternative, because they meet the goal of improving water quality to sustain beneficial uses.

Many of these management practices have been implemented over the years. BLM does not propose to have funds available to implement all referenced management practices. The continuing priority in the short term is to provide for protection of unstable areas, minimize sediment production, protect water quality by minimizing soil erosion, and ensure that constructed erosion control structures are stabilized and working. Of primary concern are management practices to reduce impacts from motorized travel on roads in the ACEC, which have been identified as a significant source of airborne asbestos emissions and excess lifetime cancer risks for CCMA visitors, as identified in the Environmental Protection Agency's Asbestos Exposure and Human Health Risk Assessment (2008). Erosion related to vehicle use on roads is also a contributor of sediment yield above background erosion rates in the CCMA watersheds. Minimizing dust emissions and erosion on routes and barrens, involving surface hardening, dust suppression, control of drainage, road slope stabilization, slope design, stream crossings, stream course protection, and seasonal use restrictions the extreme weather conditions are critical components to improving watershed conditions and overall protection of human health and the environment.

Water Availability

Under the Proposed Action, management actions include provisions for maintaining spring developments and reservoirs, and maintaining existing adjudicated water rights in the Planning Area. These actions would result in generally beneficial impacts to water availability because they meet the goal of maintaining water quantity in the Planning Area. Management actions allow BLM to control water diversions by permittees or lessees through the establishment of Federal reserved water rights. This allows for public water withdrawals from BLM lands through the State water right appropriation process; however, BLM also retains control of how water can be diverted from aquatic systems on BLM lands through the right-of-way approval process for water transmission infrastructure. These actions have an overall beneficial impact on ensuring water is available for watershed function and habitat value in

riparian areas, while also allowing for water withdrawal for approved uses in the Planning Area. This meets the goal of increasing water availability to meet resource needs.

4.9.6.2 Other Management Actions

Recreation & Travel and Transportation Management

Under the Proposed Action, allowable uses and BLM management actions are proposed to provide for limited off-highway vehicle use, as well as other non-motorized recreation opportunities. Most of these actions would result in beneficial impacts to water resources because they meet the goal of maintaining and improving water quality. In particular, dust suppression and surface hardening techniques on 25-30 miles of major roads and reducing soil disturbing activities on abandoned mine lands would contribute to reducing off-site transport of metals and asbestos and have major long-term benefits on water quality in the CCMA watersheds.

The Proposed Action would also provide for increasing and/or improving motorized access to CCMA public lands outside of the ACEC for recreation opportunities. These new access developments and improvements could result in increased sediment runoff to water bodies, which would represent a short-term minor adverse impact to water resources because water quality could be compromised in specific locations. However, the Proposed Action also contains provisions for restricting motorized access by vehicle type and incorporate route designation criteria that would minimize the introduction of sediments or contaminants into water bodies and prevent destruction of riparian habitat by motorized recreational vehicle use. Therefore, there would be negligible impacts to water resources compared to the existing conditions described in Chapter 3.

As additional data becomes available, this information will be valuable in monitoring the implementation of management actions, to determine whether restricting use in mine areas and reducing the miles of routes available for vehicle use, is having the desired effect of reducing contaminated sediment delivery downstream. The Aurora Mine site area would be completely closed between the Aurora grade and SBMRNA reducing soil disturbance and the potential for off-site transport of contaminants.

The Proposed Action would reduce the miles of available routes in the Larious and San Carlos watershed where the highest levels of background concentrations of hazardous metals are present, thereby reducing the potential for human exposure and contaminated sediment delivery. Additional routes accessing the following mine areas (Chromium, Mercury, Asbestos) would be closed: Larious watershed – Larious, Sampson, Spanish, and Wonder Mines; San Carlos watershed – San Carlos and Molina Mine; Cantua watershed – Del Mexico, Anita, Sec. 28 asbestos, and Coalinga asbestos Mines; San Benito watershed – Big Ridge Mine; White Creek watershed – Big Ridge, Tromby, Archer, Byles, and Butler Mines. Any motorized vehicle use on highly erosive areas such as unpaved roads and trails, would disturb soils containing hazardous metals, and increase erosion and transport of sediment above natural background levels. Closure of routes accessing these mines and a corresponding reduction in soil disturbance from OHV's at these areas, would contribute to long term beneficial improvements in water quality by reducing the potential for contaminated sediment delivery.

In general, under the Proposed, Action designated beneficial water uses identified for streams associated with the CCMA would be enhanced through a reduction in miles of routes and acres of barrens available for OHV use, reductions in stream crossings, and implementation of Best Management Practices to minimize watershed impacts. Considering estimates that nearly half the sediment delivered to streams within the CCMA come from stream and swale crossings, the vast reduction in the number of crossings should result in substantial reductions in sediment delivery and provide major long term beneficial effects. This information will assist in evaluating the effectiveness of route & barren area closures, along with other watershed restoration projects.

By reducing unauthorized uses, eliminating vehicle access to abandoned mine lands and completing significant road improvements and restoration projects, the BLM would contribute to the potential for beneficial impacts to water quality. The extent of the contribution of heavy metals and asbestos into the Hernandez Reservoir remains an issue, and some continued natural contribution of mercury and asbestos may be unavoidable. Water sampling data through 2002 indicates a possible overall slight downward trend in mercury concentrations in Clear Creek. However data from 2004/2005 indicates exceedance of the numeric objective for mercury in Clear Creek.

The available data indicate that the San Benito River is currently meeting water quality objectives for mercury. The data also indicate that Hernandez Reservoir is currently meeting water quality objectives for mercury (1998 data); however, mercury in fish tissues is at levels which do not meet stated objectives. The Central Coast Regional Board's Technical Report[7] indicates that sediment loading into the creek is roughly at background levels throughout most of the Clear Creek watershed, which suggests that the OHV activities were not causing any significant mercury loading.

Though some recent actions by BLM appear to have implemented the mercury-loading controls necessary to achieve the TMDL, Clear Creek is not yet fully attaining standards. BLM initially committed to the Regional Board a five year program of quarterly sampling and monitoring, and this time period has passed. The Regional Board has not requested any additional implementation efforts as the remedial actions of BLM appear to be causing a decrease in sediment concentrations of mercury in Clear Creek. Achieving the load allocations in Clear Creek is reasonably expected to achieve the load allocations in Hernandez Reservoir and restore beneficial uses of the reservoir.

Under the Proposed Action, the sediment yield from the CCMA road and trail system would be reduced. This would have a major long-term positive impact on surface water quality and possibly prolong the longevity of the Hernandez Reservoir.

Fire Management

Fire management actions under the Proposed Action are intended to improve range conditions and for fuels reduction. These prescribed burns are conducted on intervals of decades. With appropriate suppression controls and the BMPs that will be implemented to protect water quality during prescribed or wild fires, BLM's fire management actions would have a negligible adverse impact on water resources because the goal to maintain/enhance water quality could be compromised on a localized basis during fire suppression efforts around aquatic systems. Additional fire management actions include coordination efforts with the CALFIRE to minimize environmental damage, including damage to water resources, from fire suppression efforts. Wildland fire suppression and the use of prescribed fire or mechanical treatments would be managed to prevent adverse impacts to vernal pools and other waterways. These actions would have a beneficial impact to water quality and watershed function by controlling the introduction of sediment-laden suppression waters and/or chemical retardants into water bodies. These actions would have a positive long-term effect on water resources described in Chapter 3.

Livestock Grazing

The Proposed Action includes management actions that would allow BLM to make lands unavailable for livestock grazing if water resources were being degraded by grazing practices. It also would allow for fencing of spring developments to prevent trampling by livestock. These actions would result in beneficial impacts to water resources because they meet the goal of maintaining and improving water

[7] Central Coast Regional Water Quality Control Board, Staff Report; *Total Maximum Daily Load, Technical Support Analysis for Mercury Impairment of Clear Creek and Hernandez Reservoir,* March 10, 2004.

quality. These actions would have a positive long-term effect on water resources described in Chapter 3. Management actions include protecting springs from livestock trampling and establishing grazing seasons to protect other resources, including water resources. These are beneficial impacts to water resources because it meets the goal of enhancing water quality. Finally, Alternative A ensures that livestock watering developments will be managed to provide safe drinking water for wildlife. This action is a beneficial impact to water availability for wildlife needs because it meets the goal of increasing water availability to meet resource needs.

Energy and Minerals

The Proposed Action could have potential impacts to water resources from energy and mineral exploration outside of the ACEC. However, as the potential for such development is low, it is unlikely. Since oil and gas leases and mining plans of operation are also required to address protection of water resources, energy and minerals actions would meet the goal of maintaining water quality and would therefore have no adverse impact on water resources.

Under the Proposed Action, energy and mineral exploration would only be permitted outside of the ACEC. As a result, impacts to water resources within the ACEC from energy and mineral exploration would cease and provide long term moderate beneficial impacts. Therefore, the overall effects of energy and minerals management actions would have moderate long-term beneficial impacts on water resources described in Chapter 3.

4.9.6.3 Mitigation

Mitigation measures are built into the management actions in Chapter 2. Mitigation measures include management actions that incorporate the use of BMPs, restricting certain uses that degrade water quality, and periodic monitoring of water quality. These mitigation measures would have a positive long-term effect on water resources described in Chapter 3

4.9.7 Cumulative Effects

Cumulative impacts to water quality could occur in areas downstream of BLM managed lands as a result of the management actions specified in the document. For example, management actions that result in increased sedimentation and/or contamination of water bodies would likely create similar effects in downstream areas, subject to distance and other factors such as sediment/contaminant transport characteristics and the ability of aquatic systems to buffer pollutant loads. Alternative G, in general, is most protective of water resources and therefore this alternative has the lowest potential for off-site impacts to water quality. Alternative A, which affords the most intensive development and resource extraction activities, has the highest potential to adversely impact off-site water quality.

Water quantity is perhaps the most important off-site water resource issue. By allowing increased use of water from BLM managed lands, downstream areas would have less water to maintain watershed health, or for diversion purposes such as irrigation. Management actions that include BLM establishing federal water reserves would potentially adversely affect water availability to off-site (downstream) users. Alternatives that include BLM establishing federal water reserves (Alternative B through G) would potentially adversely affect water availability to off-site (downstream) users. Cumulative impacts could result from withdrawals of water to maintain watershed function or for development projects (e.g. wildlife habitat), would result in less available water for other beneficial uses over time within the Planning Area.

Cumulative impacts to water resources could result from long-term degradation of water quality through management actions that result in pollutant loading to water bodies. While the Proposed Action and all of the management alternatives include mitigation measures to prevent long-term degradation of water

bodies; non-point source pollution from un-monitored activities, like certain recreation activities and the natural erosion process, could create slow but gradual degradation of stream conditions and overall watershed function.

4.9.6.1 Cumulative Effects for Alternative A, B, C, and D

BLM actions that would increase groundwater use in the CCMA, such as installation of public wash racks would have an adverse cumulative impact on water availability. Additionally, heavy metals and asbestos are concerns in the CCMA; the BLM contracted a water quality study (Dynamac, 1998) to determine the magnitude of heavy metals being deposited into streams from 15 abandoned mines. The background concentration of metals detected in soils tended to be above stated federal standards, and is consistent with the natural geochemistry of the area. However, differences in the water samples taken from below and above abandoned mine sites indicated that disturbed areas are contributing to metal concentrations over and above the naturally high levels. Disturbance by vehicles has also been a factor in increasing concentrations of metals transported downstream in the water.

Compared to existing conditions, under these alternatives, water quality should exhibit a gradually improving trend over many years. Impacts related to OHV use of the barrens would be limited to the Clear Creek watershed. By eliminating unregulated use, eliminating vehicle access to all remaining abandoned mines, continuing completion of abandoned mine remediation projects, and by completing significant road repairs and improvements, the BLM would minimize the potential for additional human-caused impacts to the subject waterways, and maintain or enhance current water quality conditions while minimizing effects to human health. Reducing the number of miles of unpaved roads by 45 percent, and reducing soil disturbing activities at remaining mine sites, would contribute to reducing off-site transport of metals and asbestos. The extent of the contribution of heavy metals and asbestos passing into the Hernandez Reservoir remains an issue, and some continued natural contribution of mercury and asbestos may be unavoidable. Recent water sampling data indicates a possible downward trend in mercury concentrations in Clear Creek.

The Aurora Mine site area would be completely closed between the Aurora grade and SBMRNA reducing soil disturbance and the potential for off-site transport of contaminants. Alternatives C and D would reduce the miles of available routes in the Larious and San Carlos watershed where the highest levels of background concentrations of hazardous metals are present, thereby reducing the potential for human exposure and contaminated off-site sediment delivery.

Any motorized OHV use on highly erosive areas such as barren slopes and on unpaved roads and trails, could disturb soils containing hazardous metals and asbestos, and increase erosion and transport of sediment above natural background levels. Closure of routes accessing these mines and a corresponding reduction in soil disturbance from OHV's at these areas, would contribute to improvements in water quality by reducing the potential for contaminated sediment delivery.

In general, streams associated with the CCMA would be enhanced through decreased miles of routes and acres of barrens available for OHV use, reductions in stream crossings, and implementation of Best Management Practices to minimize watershed impacts. Under Alternatives C and D, riparian areas would have at least 50 percent fewer miles of OHV routes, and the number of stream crossings would decline as well compared to the existing designated route network. Nearly half the sediment delivered to streams within the CCMA comes from stream and swale crossings. Therefore, a reduced number of crossings would reduce substantially sediment delivery offsite. BLM and the USGS will continue to monitor the volume of sediment measured in tons, for daily and monthly quantities.

4.9.6.2 Cumulative Effects for Alternatives E, F, G, and the Proposed Action

Appropriation of water rights from private land owners could also contribute to decreasing amounts of water available for beneficial uses. If request for new rights-of-way for water pipelines or storage tanks are submitted, BLM would evaluate any such proposal for potential impacts to groundwater quantity or quantity and associated impacts to other CCMA resources.

Actions within the CCMA watershed involving both groundwater and surface water could affect water quality outside of CCMA. For example, ephemeral drainages flowing during the wet season and flood events could potentially carry pollutants from the surface and impact water quality in the Hernandez Reservoir and other drainages. However, BLM would need to monitor water quality in CCMA waterways, as proposed in the range of alternatives, in order to assess these potential impacts.

Overall, a substantial reduction of motorized use within the highly erosive ACEC under Alternatives E, F, G, and the Proposed Action would have beneficial cumulative effects by reducing sediment loads and transport of asbestos and heavy metals off-site to downstream areas compared to current management and other alternatives that would emphasize motorized recreation.

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4.10 Special Designations

For ease of reference, the management goals from Chapter 2 are reiterated here:

- The goals for ACECs/RNAs are to identify and manage ACECs and RNAs to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.

- The goals and objectives for managing Wilderness Study Areas (WSAs) are the same under all alternatives, including the Proposed Action. For designated wilderness areas, BLM is required to manage the areas consistent with the Act of designation and the Wilderness Act of 1964, as applicable. More specific management direction can be found in 3 CFR 6300. BLM is required to manage WSAs consistent with Section 603 of the FLPMA and the H-8550-1 Handbook (Interim Management Policy for Lands Under Wilderness Review) until Congress designates the area(s) as wilderness or releases them from the Section 603 FLPMA provision. If the areas are released, they would be managed consistent with the provisions within the RMP.

- The goal for managing Lands with Wilderness Characteristics (LWCs) is to emphasize other multiple uses while applying management restrictions (conditions of use, mitigation measures) to reduce impacts to wilderness characteristics. Management of LWCs is part of BLM's multiple use mandate. Lands within the CCMA were inventoried in 2011 in accordance with IM 2011-154, to identify public lands with wilderness characteristics such as naturalness, opportunities for solitude, primitive and unconfined recreation, and other associated qualities.

4.10.1 Introduction

This section focuses on the environmental impacts that management actions may have on the suitability of CCMA public lands for a special designation or protective management. Special designations are eligible based on the presence of particular values and qualities. These areas are designated through different processes and managed under special considerations. Special designations in the CCMA include the Serpentine Area of Critical Environmental Concern (ACEC), the San Benito Mountain Research Natural Area (RNA), and the San Benito Mountain Wilderness Study Areas (WSA). There are approximately 5,030 acres of lands with wilderness characteristics (LWCs) located in the Cantua Zone. Each special designation area is managed according to the land use allocations described in Chapter 2. There are no Wild and Scenic Rivers (WSRs) designated in CCMA.

There are no changes or modifications to the existing special designations in CCMA under the range of alternatives because the designation of the Serpentine ACEC in the 1984 Hollister RMP (as amended) is based on human health risks associated with exposure to asbestos within the serpentine soils. The boundaries of the ACEC were defined by mapping of asbestos soils derived from the New Idria serpentine formation. This ACEC is referred to frequently as the Hazardous Asbestos Area (HAA), and maintaining the current ACEC designation highlights the areas where special management attention is needed to protect human life and safety from natural hazards and prevent irreparable damage to important natural, cultural, and scenic resources.

As outlined in Section 3.10, there are two types of wilderness-related management allocations discussed in this RMP. The first involves continued interim management of the 1,500-acre San Benito Mountain WSA. This area was analyzed in a previous EIS and must be managed under BLM's Interim Management Policy for Lands under Wilderness Review (BLM 1995) under all RMP alternatives to protect its wilderness values until Congress determines whether it should be designated as part of the National Wilderness Preservation System. Under all of the plan alternatives, no or negligible impacts would occur

to the San Benito Mountain WSA based on the interim management policy requirements. The second component of the RMP involves the inventory of lands with wilderness characteristics, and the associated land use allocations to manage any or all of these inventoried lands to protect wilderness characteristics during the life of the RMP. These lands would be managed under the guidance in Chapter 2, Section 2.5.10. Note that the CCMA inventory for wilderness characteristics was updated based on comments on the Draft CCMA RMP/EIS. As a result of this update, approximately 5,030 acres outside of the original inventory units were found to possess wilderness characteristics.

During the planning process, the Hollister Field Office prepared a Wild and Scenic River Inventory to evaluate river segments within the resource management planning process to determine eligibility, tentative classification, protection requirements, and suitability under the Wild and Scenic River Act (WSRA). The Wild and Scenic River Inventory is located in Appendix VI (PRMP/FEIS Volume II). Following identification and evaluation of all rivers located on BLM-administered lands in the CCMA, the Hollister Field Office determined that none of them are appropriate for addition to the National Wild and Scenic River System (NWSRS). Therefore, BLM does not recommend legislative actions to accomplish such additions, and there is no further analysis of impacts from WSR designation in this PRMP/FEIS.

4.10.2 Overview of Impacts Common to All Alternatives

This section provides an overview of impacts that are common to all alternatives because the type of effects that special designations would have on the human environment are the same under all of the alternatives. The rationale for no changes or modifications to the existing special designations in CCMA under the range of alternatives is presented in Chapter 1 (Section 1.3.2.3), and the analysis of environmental consequences provided here is based on the severity of the impacts to the human environment from current special designations.

4.10.2.1 Special Designations

ACEC/RNA and WSA designations allow focused management to occur on these lands, which enhances the values for which they were set aside, and minimizes detrimental impacts. Management must be in strict compliance with the laws and regulations that govern their special designations.

The range of alternatives does not include actions that would result in irreversible or irretrievable impacts to existing ACEC/RNAs, WSAs, or LWCs (i.e., an impact that would make a particular ACEC/RNA, WSA, or LWC unsuitable for continued protective management).

Resources Protection and Mitigation Measures

Designation of special management areas does not preclude land uses that are appropriate (i.e. not detrimental) to the unique features or values that receive special protection. Activity plans may be necessary to enhance the values for which these areas were established, to minimize detrimental impacts, and to facilitate mitigation. To ensure protection of unique features and values, appropriate protective measures for land use authorizations would be incorporated into management actions or land use authorizations that have the potential to disturb resources.

Section 2.4.10 lists proposed ACEC/RNA, WSA, and LWC protective measures. Implementation of proposed management actions and mitigation measures to protect ACEC/RNA, WSA, or LWC values would depend on the type of disturbance, and its severity and duration. On-site inspections and project planning would be necessary to develop site-specific appropriate terms and conditions for approval. Pre-development activities may include dust suppression, seasonal restrictions, and avoidance of sensitive habitats. Appropriate activities for the development phase may include topsoil protection, minimization

of surface disturbance, reseeding of disturbed sites, wastewater containment, and implementation of buffer zones around sensitive habitats. Post-development activity could include removal and disposal of construction material, recontouring surface land to pre-disturbance alignment, erosion control, and top-soiling and reseeding disturbed sites with native or non-native, non-invasive vegetation.

4.10.2.2 Other Management Actions

Within the range of alternatives, several other management actions could have impacts on the values for which the Serpentine ACEC was established, including impacts from energy and mineral development; impacts from livestock grazing and impacts of transportation and recreational activities on natural vegetation and soil erosion. These impacts of the activities on water quality, vegetation, and soils are not exclusive to the Serpentine ACEC, and they would be similar wherever such activities occur in CCMA.

Energy and Mineral Development

Energy and mineral development in the Serpentine ACEC could potentially cause increased airborne asbestos emissions, surface and groundwater contamination, increased soil erosion, native vegetation removal, recontouring of natural terrain, and the proliferation of noxious and invasive weeds. These effects would be long-term in nature depending on the severity, duration, and application of mitigation measures. Energy and mineral development of LWC in the Cantua Zone would also have potential adverse effects on solitude, naturalness, and opportutnities for primitive and unconfined recreation.

If public lands are available for mineral entry in the Serpentine ACEC or the LWC in the Cantua Zone, surface-disturbing activities for energy and mineral development would be evaluated for potential adverse impacts on a case-by-case basis. On-site field surveys would occur on all applications. Consultations with the U.S. Fish and Wildlife Service concerning special status species and sensitive habitat would occur if appropriate.

Transportation and Recreation

Vehicular access and recreational activities in the ACEC would perpetuate human health risk from exposure to asbestos, and could potentially damage natural vegetation and increase soil erosion when travel occurs on non-established motorized vehicle routes or vehicle roadways. BLM would enforce allowable use restrictions to manage recreational activities and reduce human health risks in the Serpentine ACEC and San Benito Mountain RNA; and designated routes would be maintained to minimize detrimental long-term environmental effects. Travel management and recreation on LWC in the Cantua Zone would also have potential adverse effects on solitude, naturalness, and opportutnities for primitive and unconfined recreation. These effects would be long-term in nature depending on the severity, duration, and application of mitigation measures.

Water and Biological Resources

Wildlife habitat improvement and watershed restoration projects such as stabilizations of barrens, noxious and invasive weed abatement, or riparian area protection measures would have beneficial impacts on CCMA special designations. Such management practices would improve plant diversity, structure, and cover, decrease soil erosion, and improve soil water infiltration. Habitat and vegetation improvement projects may include topsoil protection, erosion control devices, re-seeding of disturbed areas, wastewater containment, noxious weed control, or implementation of buffer zones around sensitive habitats.

Livestock Grazing

Under all alternatives, no grazing would occur in the San Benito Mountain RNA or WSA. Livestock may affect sensitive plant communities, wildlife habitat, or special status species habitat in the Serpentine ACEC through grazing and trampling under Alternatives A through E. Sensitive habitat management and protection within grazing allotments would be accommodated in Allotment Management Plans. The HFO would work with grazing lessees to minimize potential impacts in the ACEC by placing salt licks, watering facilities, and supplemental feeding sites away from sensitive habitats. Grazing throughout an allotment is not uniform due to terrain, forage quantity and quality, weather, and water availability differences. Appropriate levels of livestock grazing would be obtained through limitation of season of use, fencing, strategic placement of watering and salting sites, or limitation of animal numbers.

Fire Management

Historically, nearly all wildfires in the Planning Area have been human caused. Though wildfires in CCMA are rare, such a high level of human ignitions is a concern, and public outreach efforts would be emphasized to reduce potential occurrences. Wildfire has the potential to destroy unique vegetation communities, wildlife habitat, and special status species habitat in the Serpentine ACEC and San Benito Mountain RNA and WSA. On the other hand, well managed use of prescribed fire would enhance the diversity and complexity of vegetation communities and wildlife habitat, reduce hazardous fuels, and abate noxious and invasive weeds in accordance with the HFO Fire Management Plan. The goal of wildfire containment is to suppress 90 percent of all fires before 10 acres are burned. Non-fire fuels treatment includes mechanical and biological controls of fuels (vegetation) rather than burning.

4.10.3 Impacts and Mitigation Common to All Alternatives

4.10.3.1 Special Designation

Under all alternatives, the existing Serpentine ACEC (30,000 acres), and the San Benito Mountain RNA (4,147 acres) and WSA (1,500 acres) would remain special designation areas. The WSA would be managed according to the Interim Management Policy (IMP) with added emphasis on management of natural resources to protect the values for which these special designations have been established. The effects of maintaining the Serpentine ACEC designation for the 30,000-acre area of serpentine soil with high concentrations of asbestos fibers associated with the New Idria serpentine mass would provide major long-term benefits to public health and safety because BLM's proposed management restrictions would reduce asbestos exposure to EPA's acceptable risk range for human health as described in Section 4.2.

Special Designation Area Protection Measures

Special designation would prevent land uses that are detrimental to the unique features or values by restricting allowable uses, or requiring special protection measures prior to BLM authorization. Appropriate management activities would be identified to enhance the natural and cultural resources values, and to minimize detrimental impacts and facilitate mitigation for activities that have the potential to disturb surface land to ensure protection of unique features and values.

In the Serpentine ACEC, management activities such as road maintenance, construction, grading, and hard rock mining, or oil and gas development, would be evaluated for potential adverse impacts to the values for which the ACEC was established.

Prior to surface-disturbing activities in a special designation area, the site would be evaluated for potential adverse environmental impacts to vegetation, wildlife, and special status species and measures to reduce or eliminate the impacts. Mitigation measures would be separated into pre-development, development, and post-development activities. Pre-development activities may include road location, fencing, and seasonal restrictions to protect sensitive resources. Appropriate activities during the development phase

may include topsoil protection, minimization of surface disturbance, re-seeding abandoned disturbed sites, wastewater containment, noxious weed control, and implementation of buffer zones around sensitive habitats. Post-development activity could include removal and disposal of construction material, recontouring surface land, topsoiling, and reseeding disturbed sites with native vegetation. Compensation may be required in the form off-site habitat enhancement such as guzzler development, seeding of native shrub or forage species, or providing funds for purchase of off-site lands.

4.10.3.2 Mitigation

Mitigation measures are incorporated in the management actions in Chapter 2. Potential impacts to sensitive vegetation, wildlife, and special status species habitat from mineral and energy production, recreation, livestock grazing, or wildfire may be identified through rangeland health monitoring. Development protective measures include site planning and evaluation, fencing, seasonal restrictions, re-seeding abandoned disturbed sites, wastewater containment, noxious weed control, recontouring surface land, and reseeding disturbed sites. These measures help avoid or minimize impacts to resources.

4.10.4 Impacts and Mitigation under Alternatives A, B, C, and D

4.10.4.1 Special Management Area Protection Measures

The impacts of special management area designations would be the same under all alternatives. Management actions included under alternatives A, B, C, and D to protect public health, special status species, and other natural and cultural resources would have minor long-term benefits to special designations in CCMA.

4.10.4.2 Other Management Actions

Energy and Mineral Development

The reasonably foreseeable energy and mineral development scenario is the same under all alternatives. Therefore impacts are expected to be similar under these alternatives because all CCMA public lands would be available for leasing, sales, and hard rock mining. However, the pre-development, development, and post development protective measure associated with Alternatives A, B, C, and D would provide minor long-term resources benefits compared to the no action alternative. Overall, the impacts of energy and mineral development would be negligible because there is no potential for oil and gas development in the ACEC, and stipulations for mining claims would require strict adherence to resource protection measures and establish reclamation bonds to rehabilitate public lands once mining activities have been terminated.

Energy and mineral development of LWC in the Cantua Zone would also have potential adverse effects on solitude, naturalness, and opportutnities for primitive and unconfined recreation. However, the effects would be minor because there is moderate potential for oil and gas development in the Cantua Zone, and stipulations for mining claims would require strict adherence to resource protection measures and establish reclamation bonds to rehabilitate public lands once mining activities have been terminated.

Recreation and Access

Alternatives A, B, C, and D would promote varying degrees of high-impact recreation activity. The types of recreation activities and allowable uses under these alternatives would have moderate long-term adverse effects on the values for which the special designation areas are established due to impacts of authorized and unauthorized off-highway vehicle use and shooting on CCMA resources.

Under Alternative D, travel management and recreation on LWC in the Cantua Zone would also have major direct adverse effects on solitude, naturalness, and opportunities for primitive and unconfined recreation. These effects would be long-term in nature and.have greater impacts on LWC than any other alternative.

Water and Biological Resources

Impacts would be similar to current management, but the pre-development, development, and post-development protective measure associated with Alternatives B, C, and D would provide additional benefits to protect these resources. On the other hand, BLM management actions for water and biological resources under these alternatives would have long-term beneficial impacts on the values for which the special designation areas are established.

Livestock Grazing

Alternatives A, B, C, and D would require that grazing lessees prohibit livestock turn-out and gathering activities within 200 feet of sensitive habitat areas; and require cattle grazing lessees to eliminate salting or supplemental feed or watering facilities within 200 feet of sensitive habitat areas. In addition, the BLM would coordinate with the grazing lessees in on-the-ground meetings at least annually at the beginning of each grazing season. These management actions would have minor long-term benefits on the values for which the ACEC was established.

Fire Management

The impacts of fire management would be the same under all alternatives. Management actions included under alternatives A, B, C, and D to reduce risk to lives, property, and resources from wildfire would have minor long-term benefits on special designation areas.

4.10.4.3 Mitigation

Potential impacts to sensitive vegetation, wildlife, and special status species habitat from mineral and energy production, recreation, livestock grazing, or wildfire would be identified through rangeland health monitoring. Specific mitigation measures would be implemented to reduce potential impacts**.** Pre-development, development, and post-development protective measures would reduce or eliminate impacts to the values for which special designation areas are established. These mitigation measures would have minor long-term beneficial impacts on these values compared to the no action alternative.

4.10.5 Impacts and Mitigation under Alternatives E, F, and G

4.10.5.1 Special Management Area Protection Measures

The impacts of special management area designations would be the same under all alternatives. Management actions included under alternatives E, F, and G to protect public health, special status species, and other natural and cultural resources would have major long-term benefits to special designations in CCMA.

4.10.5.2 Other Management Actions

Energy and Mineral Development

The reasonably foreseeable energy and mineral development scenario is the same under all alternatives. Therefore impacts are expected to be similar under these alternatives because none of the public lands in

the ACEC/RNA or WSA would be available for leasing, sales, or hard rock mining. Overall, the impacts of energy and mineral development would be negligible because there is no potential for oil and gas development in the ACEC, and BLM would recommend withdrawal of public lands in the ACEC from mineral entry. Only the United States Congress can formally withdraw public lands from mineral entry, which would result in major long-term benefits to public health and safety, special status species, and other values for which the special designation areas are established.

Designating the ACEC (Alt. E & F) and/or the entire CCMA (Alt. G) as a renewable energy exclusion area would have minor negative effects on renewable energy development because up to 63,000 acres of public lands would not be available for development of wind or solar energy resources.

The proposed withdrawal of LWC in the Cantua Zone from of energy and mineral development (and renewable energy exclusion) under Alternative G would have direct long-term beneficial impacts on solitude, naturalness, and opportunities for primitive and unconfined recreation.

Recreation and Access

Alternative E promotes low-impact activities in special designation areas and has much greater restrictions for vehicle use in the ACEC than Alternative A-D, but Alternative E would still allow motorized access for the public entirely. Alternative F and G minimize or avoid adverse effects to resources in existing special designation areas from high-impact recreational activity by limiting access to pedestrian use (i.e. foot traffic) only or prohibiting all forms of public entry into the ACEC, respectively. These alternatives would provide major long-term benefits to public health and safety, special status species, and other values for which the special designation areas are established.

Under Alternative E, travel management and recreation on LWC in the Cantua Zone would have minor indirect adverse effects on solitude, naturalness, and opportunities for primitive and unconfined recreation. These effects would be long-term in nature, but the impacts on LWC would be less than all other alternatives except for F & G, which would both have major beneficial impacts on LWC in the Cantua Zone.

Water and Biological Resources

Impacts would be less than Alternatives A, B, C, and D but the pre-development, development, and post-development protective measure associated with Alternatives E, F, and G would provide additional benefits to protect special designation area values. BLM management actions for water and biological resources under these alternatives would also have long-term beneficial impacts on the values for which the special designation areas are established.

Livestock Grazing

Alternatives E would require management actions similar to previous alternatives that would have minor long-term benefits on the values for which the ACEC was established. However, Alternatives F and G would exclude livestock grazing from the ACEC, which would also have minor long-term benefits on the health risk to grazing operators from exposure to asbestos, as well as special status species and other natural and cultural resources by reducing or eliminating the effects of trampling.

Fire Management

The impacts of fire management would be the same under all alternatives. Management actions included under Alternatives E, F, and G to reduce risk to lives, property, and resources from wildfire would have minor long-term benefits on special designation areas.

4.10.5.3 Mitigation

Mitigation measures are incorporated in the management actions in Chapter 2. Alternatives E, F, and G include measures to consolidate activities to reduce the net impact, and for recontouring and reseeding. Potential impacts to sensitive vegetation, wildlife, and special status species habitat from mineral and energy production, recreation, livestock grazing, or wildfire may be identified through Rangeland Health Monitoring. Specific mitigation measures would be developed to reduce potential impacts. The allowable use restrictions under Alternatives E, F, and G provide the most protection for special designation area values of all alternatives considered in this EIS.

4.10.6 Impacts to Special Designations for the Proposed Action

4.10.6.1 Special Designation Area Protection Measures

Under the Proposed Action, the existing Serpentine ACEC and the San Benito Mountain RNA (4,147 acres) and WSA (1,500 acres) would remain special designation areas. The WSA would be managed according to the Interim Management Policy (IMP) with added emphasis on management of natural resources to protect the values for which these special designations have been established. The effects of maintaining the Serpentine ACEC designation for the area of serpentine soil with high concentrations of asbestos fibers associated with the New Idria serpentine mass would provide major long-term benefits to public health and safety because BLM's proposed management restrictions would reduce asbestos exposure to EPA's acceptable risk range for human health as described in Section 4.2.

Special designation would prevent land uses that are detrimental to the unique features or values by restricting allowable uses, or requiring special protection measures prior to BLM authorization. Appropriate management activities would be identified to enhance the natural and cultural resources values, and to minimize detrimental impacts and facilitate mitigation for activities that have the potential to disturb surface land to ensure protection of unique features and values.

In the Serpentine ACEC, management activities such as road maintenance, construction, and grading activities would be evaluated for potential adverse impacts to the values for which the ACEC was established.

Prior to surface-disturbing activities in a special designation area, the site would be evaluated for potential adverse environmental impacts to vegetation, wildlife, and special status species and measures to reduce or eliminate the impacts. Mitigation measures would be separated into pre-development, development, and post-development activities. Pre-development activities may include road location, fencing, and seasonal restrictions to protect sensitive resources. Appropriate activities during the development phase may include topsoil protection, minimization of surface disturbance, re-seeding abandoned disturbed sites, wastewater containment, noxious weed control, and implementation of buffer zones around sensitive habitats. Post-development activity could include removal and disposal of construction material, recontouring surface land, topsoiling, and reseeding disturbed sites with native vegetation. Compensation may be required in the form off-site habitat enhancement such as guzzler development, seeding of native shrub or forage species, or providing funds for purchase of off-site lands.

Management actions included under the Proposed Action to protect public health, special status species, and other natural and cultural resources would have major long-term benefits to special designations in CCMA.

4.10.6.2 Energy and Mineral Development

Under the Proposed Action, BLM would propose that none of the public lands in the special designation areas would be available for leasing, sales, or hard rock mining. Although BLM would recommend withdrawal of public lands in the ACEC from mineral entry; only the United States Congress can formally withdraw public lands from mineral entry, which would result in major long-term benefits to public health and safety, special status species, and other values for which the special designation areas are established.

Energy and mineral development on LWC in the Cantua Zone would have long-term indirect adverse effects on solitude, naturalness, and opportunities for primitive and unconfined recreation. However, the effects would be minor because there is only moderate potential for oil and gas development in the Cantua Zone, and stipulations for mining claims or renewable energy projects would require strict adherence to resource protection measures and establish reclamation bonds to rehabilitate public lands once activities have been terminated.

Designating the ACEC as a renewable energy exclusion area would have minor negative effects on renewable energy development because 30,000 acres of public lands would not be available for development of wind or solar energy resources.

4.10.6.3 Recreation and Access

The Proposed Action promotes low-impact activities in special designation areas and has much greater restrictions for vehicle use in the ACEC than the No Action Alternative, but would still allow motorized access for the public to these areas. Motorized recreational touring would be substantially limited from historical OHV use levels, which would greatly reduce impacts from vehicles. Management actions to minimize or avoid adverse effects to resources in existing special designation areas from high-impact recreational activity would include limiting access to the *Scenic Touring Route* and promoting non-motorized recreation activities in Special Designation areas. This would provide major long-term benefits to public health and safety, special status species, and other values for which the special designation areas are established.

Travel management and recreation on LWC in the Cantua Zone would have minor long-term indirect adverse effects on solitude, naturalness, and opportunities for primitive and unconfined recreation.

4.10.6.4 Water and Biological Resources

Pre-development, development, and post-development protective measure associated with the Proposed Action would provide additional benefits to protect special designation area values. BLM management actions for water and biological resources under these alternatives would also have long-term beneficial impacts on the values for which the special designation areas are established.

4.10.6.5 Livestock Grazing

The Proposed Action would require that grazing lessees prohibit livestock turn-out and gathering activities within 200 feet of sensitive habitat areas; and require cattle grazing lessees to eliminate salting or supplemental feed or watering facilities within 200 feet of sensitive habitat areas. In addition, the BLM would coordinate with the grazing lessees annually at the beginning of each grazing season to discuss management actions to minimize potential impacts in the ACEC by. These management actions would have minor long-term benefits on the values for which the ACEC was established.

4.10.6.6 Fire Management

Management actions included under the Proposed Action to reduce risk to lives, property, and resources from wildfire would have minor long-term benefits on special designation areas.

4.10.6.7 Mitigation

Mitigation measures are incorporated in the management actions in Chapter 2. Potential impacts to sensitive vegetation, wildlife, and special status species habitat from mineral and energy production, recreation, livestock grazing, or wildfire would be identified through rangeland health monitoring. Specific mitigation measures would be implemented to reduce potential impacts**.** Pre-development, development, and post-development protective measures would reduce or eliminate impacts to the values for which special designation areas are established. Management actions include measures to consolidate activities to reduce the net impact, and provide for recontouring and reseeding of disturbed areas. The allowable use restrictions under the Proposed Action provide a high degree of protection for special designation area values. These mitigation measures would have moderate long-term beneficial impacts on these values compared to the no action alternative.

4.10.7 Cumulative Effects

The cumulative effects of energy development, mining, grazing, and similar activities on BLM-administered lands in special designation areas could potentially contaminate surface and groundwater, increase soil erosion, reduce natural vegetation cover, and proliferate noxious and invasive weeds both within the Serpentine ACEC and the San Benito Mountain RNA and WSA. Most surface disturbance would be localized to the ACEC, but noxious and invasive species issues could be regional. The impacts would be either short- or long-term, depending on their severity, and could be reduced through adequate planning, mitigation, and monitoring. Adherence to appropriate pre-development, development, and post-development protective measures would be critical to mitigate off-site and cumulative impacts.

The Proposed Action does not include actions that would result in adverse cumulative effects on the San Benito Mountain WSA (i.e., an impact that would make these areas unsuitable for continued protective management). The cumulative effects of Alternatives B, C, and D are similar to Alternative A; whereas Alternatives E, F, G, and the Proposed Action are more consistent with resources management objective and protection of the values for which the Serpentine ACEC was established because they would provide major long-term benefits to public health and safety by reducing asbestos exposure from current levels.

4.11 Livestock Grazing

For ease of reference, the management goals from Chapter 2 are restated here:

- The goals for livestock grazing management are to (1) provide for a sustainable level of livestock grazing consistent with other resource objectives, (2) identify lands and forage available for livestock grazing, and (3) achieve the standards and implement guidelines for rangeland health as outlined in the Central California Standards and Guidelines for Livestock Grazing (hereafter referred to as the Standards and Guidelines).

4.11.1 Introduction

Hollister Field Office land use decisions relating to the management of rangeland resources and livestock grazing are made in accordance with parameters defined by current BLM grazing regulations and the Central California Rangeland Health Standards and Guidelines (hereinafter, the Standards and Guidelines). Upon BLM approval in 2000, the Standards and Guidelines were amended into the 1984 Hollister RMP. An interdisciplinary team of BLM resources specialists monitors rangeland health to determine compliance with the Standards and Guidelines.

4.11.2 Overview of Impacts

This subsection provides an overview of impacts to rangeland resources that could occur under the various alternatives. The background and overall assessment is provided here and further analysis, such as the location or severity of the impact, is provided under each alternative.

4.11.2.1 Livestock Grazing

Rangeland Health Standards and Guidelines

Variance from one or more of the standards indicates that rangeland health may be compromised and corrective actions for livestock grazing may be required. Where livestock grazing would limit attainment of the standards for rangeland health, rangeland management guidelines would be implemented as necessary to attain the standards. Current grazing levels would be maintained until analysis of monitoring data and/or evaluation of rangeland health assessments identifies a need for adjustment to meet objective standards for rangeland health. The Hollister Field Office (HFO) lands that are found to be unsuitable for livestock grazing, or that contain resource values that cannot be adequately protected from livestock impacts through mitigating measures or implementation of rangeland guidelines, would not be allocated to livestock grazing. Finally, HFO lands determined by evaluation of inventory, monitoring, or rangeland health assessment to be without forage that is or would be available for livestock through implementation of rangeland guidelines would not be allocated to livestock grazing. In summary, management actions that comply with the standards and guidelines have beneficial impacts to natural resources.

Livestock Management, Including Forage, Grazing Season, and Use Levels

The HFO prepares Allotment Management Plans (AMPs) that specify livestock management, including type of livestock, season of use, level of use (specified as AUMs), and grazing intensity. The grazing season would be established based on impacts on other resources and resource use. Grazing in Areas of Critical Environmental Concern (ACEC) and/or areas where special status plant species occur will be carefully monitored to determine if adverse impacts to protected resources are occurring. If an allotment fails to comply with the Standards and Guidelines and monitoring determines that grazing is the cause, then provisions would be provided to make the necessary adjustments to bring about compliance. Livestock distributions across HFO allotments are not uniform due to terrain, soil, and forage variations.

Poor livestock distribution can lead to adverse impacts due to heavy grazing pressure on some sites (e.g., riparian habitats and adjacent terraces).

4.11.2.2 Fire Management

Prescribed fire may improve forage production, enhance wildlife habitat, reduce levels of hazardous fuels, and abate noxious and invasive weeds. Prescribed fire will often increase livestock forage within one to three years. Subsequent livestock use would depend upon residual mulch requirements and available forage each year after burning.

Wildfire can have a pronounced impact on livestock grazing through its effect on forage production. The principal forage in the HFO grazing allotments consists of annual grasses and forbs. As annual grasses and forbs mature, they provide fine fuel that can be easily ignited by lightning strikes or human causes. Forage loss on burned allotments will reduce livestock AUMs until the forage can recover sufficiently to support livestock grazing. Establishment of invasive weeds after a fire may reduce forage productivity. Post-fire rehabilitation will hasten allotment recovery and will reduce the chances for noxious and invasive weed establishment.

4.11.2.3 Habitat and Vegetation Maintenance, Protection, or Improvement

Prescribed fire, mechanical treatments, herbicides, watering facilities, fencing, and livestock grazing are tools used to enhance wildlife habitats and vegetation communities in rangelands. The HFO uses prescribed fire and mechanical treatments to achieve diversity in habitat types and plant communities. Herbicide use is minimal and used to control unwanted vegetation that does not respond to other treatments. Fences and watering facilities improve livestock distribution throughout an allotment. In addition, noxious and invasive weed management is an important part of rangeland maintenance.

4.11.2.4 Land Disposal, Acquisition, or Exchanges

Suitability for livestock grazing would be considered in land use authorizations, and the acquisition of new lands would likely provide minor long-term benefits by increasing the land available for grazing.

4.11.3 Impacts and Mitigation for Alternative A - E

4.11.3.1 Livestock Grazing

Rangeland Health Standards and Guidelines

Interdisciplinary rangeland health assessments on all grazing allotments would be carried out to evaluate conformance with the Standards and Guidelines. Alternatives would provide specific measures to maintain or improve rangeland health with regard to livestock grazing, a beneficial impact.

Livestock Management, Including Forage, Grazing Season, and Use Levels

Under Alterative A-E, grazing use is authorized on 14 allotments on 22,140 acres within the CCMA boundary. Grazing use allocations within the CCMA total 1,354 AUMs. Current grazing allotments are meeting the demand for livestock grazing in the Planning Area, so existing management actions provide a beneficial impact to rangeland resources for grazing access and use. When rangeland health evaluations determine that exclusion of livestock grazing may be necessary to meet resource objectives, these areas would not be available for livestock grazing, which represents a beneficial impact to other natural resources, but may also result in minor adverse impacts to grazing opportunity. Where livestock grazing may be found to limit achievement of multiple-use objectives, actions to control grazing intensity,

duration, timing, and deferment would be required to meet physiological requirements of key plant species or to meet other resource objectives, which represents a beneficial impact to other natural resources, but may also result in minor adverse impacts to grazing opportunity. Spring developments to provide water for livestock and wildlife would be fenced to prevent trampling, a beneficial impact to riparian areas. Conversion of existing allotments from sheep to cattle grazing would occur if determined to be compatible with rangeland health standards and in conformance with resource objectives. The conversion of allotments between livestock species is not anticipated to result in adverse impacts to natural resources or general rangeland health. Under Alternative A - E, approximately 1,986 acres of lands designated for grazing are located in the Clear Creek ACEC. Grazing in the ACEC has the potential for minor adverse impacts on cultural resources, paleontological resources, and sensitive species habitat from livestock trampling or disturbance, including potential habitat for the federally-listed San Benito evening primrose.

4.11.3.2 Recreation and Access

Under all alternatives vehicular activity could potentially damage vegetation and increase soil erosion when travel occurs on non-established motorized vehicle routes or vehicle roadways. This could adversely impact range condition and long term production for livestock.

Under Alternatives A, B, and C there would not be a significant change to livestock grazing in CCMA. Motorized vehicle activity would remain focused in the ACEC. Minor impacts to livestock grazing would continue to occur.

Under Alternative D, management actions specify increasing and/or improving motorized access to CCMA public lands outside of the ACEC for recreation opportunities. The increase in access to the Condon, Tucker and Cantua areas could result in increased vehicle activity in grazing areas not previously used for recreation. The potential for user conflicts and impacts to vegetation utilized by livestock would increase. These impacts would be moderately adverse.

Under Alternative E, management actions would continue to encourage recreation activity and access in the Condon, Tucker and Cantua area which could result increased conflicts with livestock grazing and private land due to limited vehicle access in CCMA with emphasis on non-motorized use. The impacts of this alternative to livestock grazing would be slightly adverse.

4.11.3.3 Fire Management

The period of grazing deferment after wildland fire would be consistent with site characteristics, ecological site descriptions, land management objectives, short-term emergency stabilization and rehabilitation objectives (e.g., promotion of the desired plant community), and events occurring before, during, and after the fire, which represents beneficial impacts to rangeland resources. All alternatives recognize the threat of noxious and invasive weeds to livestock grazing and forage productivity. The HFO would provide management action to abate the proliferation of noxious and invasive weeds, resulting in beneficial impacts to rangeland resources.

4.11.3.4 Habitat and Vegetation Maintenance, Protection, or Improvement

Livestock grazing would be allowed to improve wildlife habitat and enhance vegetation resources. This would be considered a moderate, long-term benefit to livestock grazing and would be consistent with goals and objectives for biological resources management.

4.11.3.5 Land Disposal, Acquisition, or Exchanges

Suitability for livestock grazing would be considered in land use authorizations, and the acquisition of new lands would likely provide minor long-term benefits by increasing the land available for grazing. Under Alternatives B and C, approximately 3,300 acres of land designated for grazing allotments are also designated for potential disposal. This represents a moderate to major adverse impact because the amount of land available for ruminants would not meet current demand levels in the Planning Area.

4.11.3.6 Mitigation

Rangeland health would be monitored to identify allotments not meeting the Standards and Guidelines, and corrective action would be taken through AMPs as appropriate.

4.11.4 Impacts and Mitigation from Alternative F

4.11.4.1 Livestock Grazing

Rangeland Health Standards and Guidelines

Interdisciplinary rangeland health assessments on all grazing allotments would be carried out to evaluate conformance with the Standards and Guidelines. Alternatives would provide specific measures to maintain or improve rangeland health with regard to livestock grazing, a beneficial impact.

Livestock Management, Including Forage, Grazing Season, and Use Levels

Under Alterative F, grazing use would continue to be authorized on all 14 allotments, but approximately 83 AUMs that were previously grazed would become unavailable, and 1,986 acres of lands located in the Serpentine ACEC would be excluded from the existing grazing allotments, providing a total of 20,154 acres and 1,271 AUMs available for grazing on public lands in CCMA located outside of the ACEC. This would result in a minor, long-term adverse impact on four (4) grazing lessees in the CCMA and a moderate adverse impact to one lessee due to an eighty percent loss of public lands from their allotment. The modification of allotment boundaries may require construction of additional fence along the boundary of the ACEC.

When rangeland health evaluations determine that exclusion of livestock grazing may be necessary to meet resource objectives outside the ACEC, these areas would become unavailable for livestock grazing, which represents a beneficial impact to other natural resources, but may also result in increased adverse impacts to grazing opportunity. Where livestock grazing may be found to limit achievement of multiple-use objectives, actions to control grazing intensity, duration, timing, and deferment would be required to meet physiological requirements of key plant species or to meet other resource objectives, which represents a beneficial impact to other natural resources, but may also result in minor adverse impacts to grazing opportunity. Spring developments to provide water for livestock and wildlife would be fenced to prevent trampling, a beneficial impact to riparian areas.

4.11.4.2 Recreation and Access

Under Alternative F, recreation and access would be significantly limited within the ACEC. This may increase use in grazing lands adjacent to the ACEC. The potential increase in recreation use would have a minor impact to grazing use.

4.11.4.3 Fire Management

The period of grazing deferment after wildland fire would be consistent with site characteristics, ecological site descriptions, land management objectives, short-term emergency stabilization and rehabilitation objectives (e.g., promotion of the desired plant community), and events occurring before, during, and after the fire, which represents beneficial impacts to rangeland resources. Prescribed burning exclusively for rangeland type conversion would not occur, which would potentially limit the acreage of suitable land for grazing purposes, a minor adverse impact. Alternatives F would allow BLM to manage for the threat of noxious and invasive weeds to livestock grazing and forage productivity. The HFO would provide management action to abate the proliferation of noxious and invasive weeds, resulting in beneficial impacts to rangeland resources.

4.11.4.4 Habitat and Vegetation Maintenance, Protection, or Improvement

Livestock grazing would be allowed to improve wildlife habitat and enhance vegetation resources. This would be considered a moderate, long-term benefit to livestock grazing and would be consistent with goals and objectives for biological resources management.

4.11.4.5 Land Disposal, Acquisition, or Exchanges

Suitability for livestock grazing would be considered in land use authorizations, and the acquisition of new lands would likely provide minor long-term benefits by increasing the land available for grazing.

4.11.4.6 Mitigation

Rangeland health would be monitored to identify allotments not meeting the Standards and Guidelines, and corrective action would be taken through AMPs as appropriate.

4.11.5 Impacts and Mitigation Under Alternative G

4.11.5.1 Livestock Grazing

Under this alternative, livestock grazing would be excluded from public lands within the CCMA boundary. The exclusion of grazing on 22,140 acres in CCMA would be a severe adverse impact to 7 individual grazing operations on seven (7) BLM allotments. A total of six (6) grazing allotments would be eliminated by this action due to significant reductions in available public land within their allotment boundaries. The modification of allotment boundaries on the remaining eight (8) allotments may require construction of fence along the boundary of CCMA, which could have minor short-term adverse impacts on special status species from surface disturbance during construction activities. Removing livestock from the entire CCMA could have moderate long-term beneficial impacts on special status animals and their associated habitats because more forage would be available for cover and consumption for terrestrial species. Conversely, eliminating livestock grazing could have minor, long-term adverse effects on aquatic species because natural succession would reduce existing habitat quality in ponds and meadows.

4.11.5.2 Recreation and Access

Under Alternative G, recreation and access would be significantly limited. This would result in little or no impact to livestock grazing use.

4.11.5.3 Fire Management

Same as Alternatives F.

4.11.5.4 Habitat and Vegetation Maintenance, Protection, or Improvement

Same as Alternatives F.

4.11.5.5 Land Disposal, Acquisition, or Exchanges

Approximately 3,300 acres of land designated for grazing allotments are also designated for potential disposal. This represents a moderate to major adverse impact because the amount of land available for ruminants would not meet current demand levels in the Planning Area. In addition, this alternative could result in major adverse impacts if lands designated for disposal support high-quality special status species habitat.

4.11.5.6 Mitigation

Rangeland health would be monitored to identify allotments not meeting the Standards and Guidelines. In addition, specific measures to prevent overgrazing and protect sensitive habitat from grazing on specific allotments are included in management actions for special designation areas.

4.11.6 Impacts to Rangeland Resources for the Proposed Action

4.11.6.1 Livestock Grazing

Rangeland Health Standards and Guidelines

Interdisciplinary rangeland health assessments on all grazing allotments would be carried out to evaluate conformance with the Standards and Guidelines. The Proposed Action provides specific measures to maintain or improve rangeland health with regard to livestock grazing and provides long term beneficial impacts.

Livestock Management, Including Forage, Grazing Season, and Use Levels

Under the Proposed Action, grazing use is authorized on 14 allotments on 22,140 acres within the CCMA boundary. Grazing use allocations within the CCMA total 1,354 AUMs. Current grazing allotments are meeting the demand for livestock grazing in the Planning Area, so existing management actions provide a beneficial impact to rangeland resources for grazing access and use. When rangeland health evaluations determine that exclusion of livestock grazing may be necessary to meet resource objectives, these areas would not be available for livestock grazing, which represents a beneficial impact to other natural resources, but may also result in minor adverse impacts to grazing opportunity. Where livestock grazing may be found to limit achievement of multiple-use objectives, actions to control grazing intensity, duration, timing, and deferment would be required to meet physiological requirements of key plant species or to meet other resource objectives, which represents a beneficial impact to other natural resources, but may also result in minor adverse impacts to grazing opportunity. Spring developments to provide water for livestock and wildlife would be fenced to prevent trampling, a beneficial impact to riparian areas. Conversion of existing allotments from sheep to cattle grazing would occur if determined to be compatible with rangeland health standards and in conformance with resource objectives. The conversion of allotments between livestock species is not anticipated to result in adverse impacts to natural resources or general rangeland health. Approximately 1,986 acres of lands designated for grazing are located in the Clear Creek ACEC. Grazing in the ACEC has the potential for minor adverse impacts on cultural resources, paleontological resources, and sensitive species habitat from livestock trampling or disturbance, including potential habitat for the federally-listed San Benito evening primrose.

4.11.6.2 Recreation and Access

Under the Proposed Action vehicular activity could potentially damage vegetation and increase soil erosion when travel occurs on non-established motorized vehicle routes or vehicle roadways. This could have minor adverse impacts to range condition and long term production for livestock.

The Proposed Action would encourage recreation activity and access outside the ACEC in the Condon, Tucker and Cantua areas and could result in increased vehicle and recreation activities in grazing areas not previously used for recreation. The shift in focus to recreation opportunities outside the ACEC and resulting increase in access to the Condon, Tucker and Cantua areas has the potential for user conflicts and impacts to private lands and to vegetation utilized by livestock. The impacts to livestock grazing would be minor long term adverse impacts.

4.11.6.3 Fire Management

The period of grazing deferment after wildland fire would be consistent with site characteristics, ecological site descriptions, land management objectives, short-term emergency stabilization and rehabilitation objectives (e.g., promotion of the desired plant community), and events occurring before, during, and after the fire, which represents beneficial impacts to rangeland resources. The Proposed Action recognizes the threat of noxious and invasive weeds to livestock grazing and forage productivity. The HFO would implement management actions to abate the proliferation of noxious and invasive weeds, resulting in long term beneficial impacts to rangeland resources.

4.11.6.4 Habitat and Vegetation Maintenance, Protection, or Improvement

Livestock grazing would be allowed to improve wildlife habitat and enhance vegetation resources. This would be considered a moderate, long-term benefit to livestock grazing and would be consistent with goals and objectives for biological resources management.

4.11.6.5 Land Disposal, Acquisition, or Exchanges

Suitability for livestock grazing would be considered in land use authorizations, and the acquisition of new lands would likely provide minor long-term benefits by increasing the land available for grazing. Under the Proposed Action, approximately 368 acres of land allocated for livestock grazing would also be available for disposal. The reasonably foreseeable future use of the 280 acres in the Condon zone identified for disposal would be grazing associated with the existing grazing allotment. On the other hand, the reasonably foreseeable future use of the other 88 acres identified for disposal in the San Benito River Zone is unknown. However, the disposal of these lands would only have minor adverse impacts on the availability of forage and the amount of land available for ruminants because the area is very small compared to the vast amount of lands and the available forage in the Planning Area.

4.11.6.6 Mitigation

Rangeland health would be monitored to identify allotments not meeting the Standards and Guidelines, and corrective action would be taken through AMPs as appropriate.

4.11.7 Cumulative Effects

Grazing has the potential to affect wildlife and sensitive species habitats, but appropriate management would alleviate negative impacts. Increased grazing would not occur in areas where wildlife habitat is the main management concern. Grazing may contribute to maintaining a diversity of vegetative stages and plant associations and may mitigate any lesser adverse impacts on special status species or wildlife habitats caused by grazing; therefore, grazing would be considered a beneficial impact. Livestock grazing would also be effective in reducing fine fuels that may carry wildland fire across the landscape.

Potential negative cumulative impacts that may result from livestock grazing would include impairment of surface water resulting from the removal of vegetation cover in the watersheds, which could increase sediment load to streams. However, any allotments that are not in conformance with the range health standard for water quality would be made unavailable until the standards can be reached. Furthermore, impacts from reduced vegetation cover would most likely be short term because most grazing occurs on annual grasslands, which are reestablished with each new growing season. Livestock could also transport weed seeds to and from rangeland and private land, which could be a significant cause of weed expansion throughout the region. Long-term management efforts may be required for weed abatement once populations are established.

Cumulative impacts related to grazing management would be localized to riparian, grassland, and shrub habitats that occur in specific allotments. The effects of grazing on native plant species structure, cover, and diversity would be variable because of non-uniform grazing that result from differences in terrain, forage abundance and preference, and soil attributes. The duration of the impact would depend on its magnitude and reoccurrence.

Cumulative impacts would be similar under Alternatives A, B, C, D, E, and the Proposed Action; however, decreases in grazing acres and AUMs in allotments under Alternatives F and G would result in decreases in adverse cumulative impacts of livestock grazing on public lands in the Planning Area.

4.12 Energy and Minerals

For ease of reference, the management goals from Chapter 2 are restated here:

- Establish guidelines for managing resources to allow development of energy and minerals resources to meet the demand for energy and mineral production while protecting natural and cultural resources in the area.

4.12.1 Introduction

Management actions for energy and minerals include various requirements for the different types of possible exploration and development: oil and gas, mineral, wind, and geothermal.

The BLM's 2005 *Reasonably Foreseeable Development Scenario for Oil and Gas* (Appendix VIII) for the Hollister Field Office shows the CCMA is considered to have low to moderate potential for oil and gas production, so it is unlikely that any wells would be drilled on BLM-administered lands. Over the last 10 years, no oil and gas wells have been drilled on Federal lands within the CCMA, and no oil and gas exploration or production, currently takes place in the CCMA. No commercial-scale wind energy or geothermal power facilities exist within the Planning Area either, although there is and some limited mineral production on private lands and casual use mining claims on CCMA public lands.

4.12.2 Overview of Impacts

4.12.2.1 Energy and Minerals Management Actions

The BLM has estimated that over the next 15 to 20 years there will be no more than 15 exploratory and development wells drilled on Federal lands in the entire Hollister Field Office. The BLM has assumed that there would be some pipelines and roads associated with the drilling as well as some seismic exploration. This is estimated to have a total disturbance of 74 acres, of which one third (26 acres) would be temporary and would be mostly or fully restored within a few months to a couple of years of construction, as noted in the BLM's 2005 *Reasonably Foreseeable Development Scenario for Oil and Gas* (Appendix VIII).

The majority of the BLM public lands that are considered as having high potential for oil and gas are outside of CCMA, and therefore would not be affected by the range of alternatives in Chapter 2.

Potential impacts from BLM management actions associated with mineral exploration and development include (1) restriction of access to minerals, wind energy sites, and oil and gas, which may limit production and increase dependence on other domestic sources or foreign energy sources; (2) decreased income from the local production of these materials, and (3) the unavailability of local building stone or other raw mineral materials.

Additionally, potential impacts associated with wind energy and geothermal exploration and development would be restriction of access to areas where wind or geothermal production potential exists, which may result in decreased local production of electricity and decreased local income from local construction and operation employment opportunities associated with these energy developments. This is also addressed in Section 4.15, "Social and Economic Conditions."

Potential direct and indirect impacts from energy and minerals exploration and development to natural resources could include disturbed land, increased vehicular traffic, decreased scenic opportunities and visual quality, impacts on habitat, noise, air emissions (dust and pollutant air quality), and increased

erosion resulting in additional sediment loading to area watersheds. These impacts are analyzed in the respective resource sections of Chapter 4.

Finally, abandoned mine lands (AML) are not addressed in this section because the management actions for all of the alternatives sufficiently address activity-level plans or project-specific mitigation/ reclamation planning such that AML would not result from future mineral extraction on public lands in the Planning Area. AML from historic mining activities are addressed in the Section 4.2.

4.12.2.2 Other Management Actions

Management actions under other resource programs that could impact energy and mineral development include the following.

Social and Economic Conditions

Management actions specified for social and economic conditions address varying degrees of promoting commodity development in the Planning Area, which can affect the degree to which energy and minerals development can be implemented economically.

Travel and Transportation Management

Several management actions for transportation and access under each alternative impose limitations on vehicle use, development of new roads, and closure of existing road networks in the CCMA. Since energy and minerals development requires the use of vehicles and potentially new road construction, this resource program has the potential to significantly affect the ability to develop these resources.

Land Tenure Adjustments

Disposal of BLM managed lands with moderate potential for energy or mineral production would have a minor adverse impact on the development of these resources if the disposed lands were restricted for such use, either by private owners or other public entities.

4.12.3 Impacts and Mitigation for Alternative A

4.12.3.1 Energy and Minerals Management Actions

Current management actions outlined in the 1984 Hollister RMP and the 1993 Oil and Gas Amendment would continue to provide opportunities to develop energy and mineral resources on a case-by-case basis in areas deemed appropriate for development by BLM. However, BLM would pursue withdrawal of certain public lands in Clear Creek Canyon and the San Benito RNA. These impacts would be negligible based on existing conditions and reasonably foreseeable development of energy and minerals in CCMA The absence of a management framework for acquired lands and wind energy under Alternative A would represent a minor to moderate adverse impact to energy and minerals because the goal of meeting the demand for increased energy production would not be fully met.

4.12.3.2 Other Management Actions

Social and Economic Conditions

There are no management actions for social and economic conditions specified for Alternative A; therefore, no impacts to energy and minerals would occur from this resource program under the no action alternative.

Travel and Transportation Management

Under Alternative A, management actions limit vehicle use to designated routes and barrens. These actions would have a negligible impact on energy and mineral exploration and development because of the extensive route network in CCMA. The highest impacts would occur in the Tucker and Cantua Zones, as there are no designated routes in these management zones, but they are within or immediately adjacent to areas with moderate to high potential for energy development as specified in the Reasonably Foreseeable Development (RFD) scenario contained in Appendix VIII.

Land Tenure Adjustments

None of the management actions under Alternative A identify specific public lands for disposal; therefore, no impacts to energy and minerals would occur from this resource program under the no action alternative.

4.12.3.3 Mitigation

Under Alternative A, mitigation measures would include use of appropriate "no surface occupancy" stipulation controls and other mitigation/monitoring management guidelines listed in Chapter 2. These measures would have negligible impacts on energy and mineral development and moderate beneficial impacts on BLM resource management goals and objectives.

4.12.4 Impacts and Mitigation Common to Alternative B and C

4.12.4.1 Energy and Minerals Management Actions

Under all alternatives, BLM would maintain and protect natural and cultural resources and the existing conditions in the San Benito Mountain WSA and the Serpentine ACEC. However, Alternatives B and C would have fewer impacts on energy and minerals development compared to Alternative A over the long term because BLM would not pursue withdrawal of any public lands from mineral entry. Development in the Serpentine ACEC would have beneficial impacts to energy and minerals, although they would be minor because the area only has moderate potential for energy development, including wind energy (refer to Map 10 in Appendix I).

The introduction of a management framework for renewable energy development under these alternatives would represent a minor to moderate beneficial impact on energy development and BLM's goal of meeting the demand for increased energy production.

4.12.4.2 Other Management Actions

Social and Economic Conditions

Management actions for social and economic conditions are common to Alternatives B, C, and D. The impacts of social and economic management action would be negligible based on existing conditions and reasonably foreseeable development of energy and minerals in CCMA.

Travel and Transportation Management

Similar to Alternative A, management actions common to Alternatives B, C, and D limit vehicle use to designated routes throughout the CCMA, including specific areas such as portions of the Serpentine ACEC, and the Tucker, Condon, and Cantua zones. These actions could adversely impact the ability to explore and develop energy and mineral resources in currently roadless areas; however, these impacts would be minor to moderate because most roadless areas are outside of high potential areas for energy development as specified in the RFD (Appendix VIII).

Land Tenure Adjustments

Common management actions to Alternatives B, C, and D include efforts to acquire lands in specific areas to reduce user conflicts and increase logic in public land use patterns, and to dispose of lands that meet certain screening criteria. Acquisition of lands with high potential for energy development, including wind energy, would represent a beneficial impact to energy and minerals development, while disposal of such land could result in adverse impacts. Approximately 3,300 acres of public lands are identified for disposal under Alternatives B and C; which would have minor adverse effects on energy and mineral development if the disposed lands were restricted for such use, either by private owners or other public entities.

4.12.4.3 Mitigation

Mitigation under Alternative B and C includes use of appropriate surface disturbance controls and other mitigation/monitoring management guidelines outlined in Chapter 2. These effects of these measures on energy and mineral development would be negligible.

4.12.5 Impacts and Mitigation for Alternative D, E, and F

4.12.5.1 Energy and Minerals Management Actions

Under Alternatives D, E, and F, all BLM-administered lands in the Serpentine ACEC would be withdrawn from energy and mineral development, including wind energy. Restriction of energy development in these areas would have a minor adverse impact on energy and minerals development because while other areas in the Planning Area with higher potential for energy development would be available for development, the goal of meeting the demand for energy and mineral production may not be fully met when the ACEC is closed to development. However, this alternative would meet the goal of allowing for some energy and mineral production while ensuring adequate protection of human health and the environment.

4.12.5.2 Other Management Actions

Social and Economic Conditions

Under Alternatives D, E, and F, management actions for social and economic conditions would focus on allowing commodity production, including energy and minerals development, while emphasizing protection of human health and the environment. These actions would likely result in more stringent

restrictions and/or mitigation requirements on where and how energy and mineral extraction could occur. While this would not create an adverse affect on the opportunity for rockhounding (i.e. hobby gem and mineral collection), it could slightly adversely affect the economic viability of energy and mineral development in certain areas; although the impacts would be minor because the area only has low or moderate potential for energy development, including wind energy.

Travel and Transportation Management

Under Alternatives E and F, management actions for transportation and access substantially limit the use of roads in the Serpentine ACEC year-round, and elsewhere in CCMA during periods of inclement weather. Also, all vehicle access in the San Benito Mountain RNA would be authorized by permit only. These actions would have minor adverse impacts on energy and minerals development by limiting the areas and times when exploration and development could occur. The CCMA contains relatively few areas of high and moderate potential for energy development, including wind energy, so exclusion of vehicles use in this area for energy development would have a long-term moderate adverse impact.

Land Tenure Adjustments

Approximately 3,300 acres of public lands are identified for disposal under Alternative E; which would have minor adverse effects on energy and mineral development if the disposed lands were restricted for such use, either by private owners or other public entities.

Under Alternative F, no BLM-managed lands are identified for disposal. Rather, BLM would consider acquisition of lands from willing sellers with moderate to high energy potential, which would result in a minor beneficial impact to energy and minerals because they would potentially be available for development.

4.12.5.3 Mitigation

Under Alternatives D, E, and F, oil and gas leases would be limited to “no surface occupancy” stipulations in special status species habitat as a mitigation measure and the endangered species stipulations guidelines listed in Chapter 2.

4.12.6 Impacts and Mitigation for Alternative G

4.12.6.1 Energy and Minerals Management Actions

Under Alternative G, all 63,000 acres of BLM-administered lands in CCMA would be withdrawn from mineral entry. Withdrawal of public lands from mineral entry in the CCMA would only have a minor adverse impact on energy and minerals because other public lands in the Hollister Field Office with higher potential for energy development would be available, although the goal of meeting the demand for energy and mineral production may not be fully met, including encouraging the development of renewable energy resources.

4.12.7 Impacts to Energy and Minerals for the Proposed Action

4.12.7.1 Energy and Minerals Management Actions

Under the Proposed Action all BLM-administered lands in the Serpentine ACEC would be unavailable for mineral leasing or sales and BLM would recommend the entire 30,000-acre area for withdrawal from mineral entry. The ACEC would also be excluded for renewable energy development due to the high

concentrations of asbestos fibers in the serpentine soils and the potential for increased hazardous materials emissions form energy development proposals and the associated public health and safety concerns.

Based on existing conditions and the low potential for reasonably foreseeable development of energy and minerals in the ACEC, restriction of mineral development in this area, would have a minor adverse impact on energy and minerals development as a whole because other areas in the HFO management boundary with higher potential for energy development would continue to be available for development. However, the Proposed Action would still allow for energy and mineral production outside the ACEC within the CCMA. BLM would maintain and protect natural and cultural resources and the existing conditions in the San Benito Mountain WSA and the Serpentine ACEC.

4.12.7.2 Other Management Actions

Social and Economic Conditions

Under the Proposed Action, management actions for social and economic conditions would focus on allowing commodity production outside the ACEC, including energy and minerals development, while emphasizing protection of human health and the environment. These actions would likely result in more stringent restrictions and/or mitigation requirements on where and how energy and mineral extraction could occur. While this would not create an adverse effect on the opportunity for rockhounding (i.e. hobby gem and mineral collection), it could slightly adversely affect the economic viability of energy and mineral development in certain areas; although the impacts would be minor because the area only has low or moderate potential for energy development, including wind energy.

Travel and Transportation Management

Under the Proposed Action, management actions for transportation and access substantially limit the use of roads in the Serpentine ACEC year-round, and elsewhere in CCMA during periods of inclement weather. Also, all vehicle access in the ACEC would be authorized by permit only. These actions would have minor adverse impacts on energy and minerals development by limiting the areas and times when exploration and development could occur. The CCMA contains relatively few areas of high and moderate potential for energy development, including wind energy, so exclusion of vehicles use in this area for energy development would have minor long-term adverse impacts. The highest impacts would occur in the Tucker and Cantua Zones, as there are currently no designated routes in these management zones, but they are within or immediately adjacent to areas with moderate to high potential for energy development as specified in the Reasonably Foreseeable Development (RFD) scenario contained in Appendix VIII.

Land Tenure Adjustments

Approximately 368 acres of public lands are identified for disposal under the Proposed Action; which would have negligible adverse effects on energy and mineral development.

4.12.7.3 Mitigation

Under the Proposed Action, oil and gas leases would include potential “no surface occupancy” stipulations in special status species habitat as a mitigation measure and include mitigation/monitoring management guidelines and stipulations listed in Chapter 2. These measures would have negligible impacts on energy and mineral development because the reasonably foreseeable development is limited to areas outside of the CCMA.

4.12.8 Cumulative Effects

The CCMA Planning Area includes public and private lands in western Fresno and southern San Benito counties. Overall, there have been hundreds of wells drilled in the entire HFO management boundary in the past few decades, along with construction of more than a hundred miles of roads. All of the dry holes have been plugged and reclaimed, and most are no longer visible. Many of the roads have also been reclaimed and are no longer visible. The remaining oilfields and associated roads are in various states of maintenance. The level of reasonably foreseeable development within the CCMA is a negligible portion of the overall development in the assessment area. To the south of the HFO management boundary lie the largest oilfields in the lower 48 states, which are administered by the Bakersfield Field Office of BLM in Kings' and Kern Counties. They contain tens of thousands of producing wells, with 2,000 or more wells being drilled each year. It is unknown whether the level of drilling will increase or decrease in these regions over the life of the RMP. In any event, the level of activity outside the CCMA will be several orders of magnitude greater than within the CCMA because production of energy and minerals within the CCMA would add negligible levels to overall production within the region, even if new reserves are developed in areas with low to moderate potential based on the value of oil.

Beneficial cumulative impacts associated with under Alternatives A, B, and C including increased jobs and income from energy and minerals would be negligible based on current conditions and trends for development and exploration in the CCMA. Potential negative cumulative impacts of energy and minerals development under Alternatives A, B, and C include reduced habitat quality from erosion and sediment transport to off-site streams, increased vehicular traffic (including commercial vehicles), increased noise and dust generation, decreased visual quality, and decreased scenic recreational opportunities.

Beneficial cumulative impacts associated with limits on energy and minerals development under Alternatives D – G, and the Proposed Action, would include reduced erosion and sediment transport to off-site streams, increased visual quality, and enhanced recreational opportunities for hobby gem and mineral collection (i.e. rockhounding).

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4.13 Cultural Resources

4.13.1 Introduction

Cultural resources include prehistoric and historic archeological sites, artifacts and rock art, sacred sites and other traditional cultural properties, buildings and structures, landscaping, and historic districts and rural landscapes. Consideration and treatment of cultural resources by Federal agencies is mandated by a number of Federal statutes (Chapter 3.13.2).

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to "take into account the effects of Federal actions on historic properties" and outlines Federal agency responsibilities for identification, management, protection, preservation, and use of historic properties. The principal Federal regulations that guide implementation of the NHPA are found at 36 CFR 800 (Protection of Historic Properties) and 36 CFR 60 (National Register of Historic Places).

The BLM National Programmatic Agreement (PA) between BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (SHPO) provides alternative procedures for implementing 36 CFR 800, along with BLM Manual 8100 Series, and the California Protocol implementing the National PA.

The objective of the protection component for BLM's cultural resource management program is aimed toward protecting the significance of cultural resources by ensuring that they are managed in a manner suited to the characteristics, attributes, and uses that contribute to their public importance; toward giving adequate consideration to the effects of land use decisions on cultural properties; toward meeting legal and regulatory obligations through a system of compliance fitted to BLM's management systems; and toward ensuring that cultural resources on public land are safeguarded from improper use and responsibly maintained in the public interest.

Not all cultural resources are significant and qualified for consideration under the NHPA and other regulations. Significant resources are designated as "historic properties" and are defined in 36 CFR 800.16(1) as "any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP)."

Historic properties on Federal lands are identified through survey, research, and often test excavations to determine their NRHP eligibility. Identification of historic properties is assumed under Federal management of cultural resources and can require a tremendous level of specialist effort when large public land holdings are involved; treatments and procedures developed to protect and preserve such historic properties can also be extremely diverse and complex.

For these reasons, management strategies for cultural resources are often addressed in specific plans that focus on certain resource types or particular areas of cultural sensitivity within the larger Planning Area. Preparation of a Cultural Resources Project Plan (CRPP) for BLM managed lands in different management areas of the Hollister Field Office would support the accomplishment of other cultural resource management actions.

4.13.2 Overview of Impacts and Mitigation Measures

4.13.2.1 Impacts to Cultural Resources

Virtually all impacts under the NEPA are defined as adverse effects for purposes of compliance with Section 106 of the NHPA. According to 36 CFR 800.9(a), "an undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify the property for

inclusion in the National Register." An effect is considered adverse when the effect on a National Register-eligible property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association. These effects are caused primarily by direct impacts of soil-disturbing activities and indirect impacts by authorized management actions from other resource activities such as road, grazing, and fire management. Adverse effects include the physical destruction of all or part of the property. Adverse effects on historic properties include, but are not limited to,

> Physical destruction or alteration of all or part of the property;
>
> Isolation of the property from or alteration of the property's setting when that character contributes to the property's qualifications for listing in the National Register;
>
> Introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting;
>
> Neglect of a property resulting in its deterioration or destruction;
>
> Transfer, lease, or sale of the property.

These adverse effects would be permanent and direct impacts on the resource because the sites are non-renewable that can be irretrievably lost if subject to certain management actions. The effects can be mitigated by a variety of methods based on the type of site and proposed action. The chosen method(s) is determined by consultations between the Federal agency, SHPO, and the Advisory Council on Historic Preservation with applicable Native American tribes and the public as necessary.

Impacts to Cultural Resources from OHV Activity

Although impacts to cultural resources come from a variety of different vectors (Chapter 3.13.1), one form of human-caused activity from has the potential to impact cultural resources in profound ways: OHV recreation. If this activity is mismanaged or poorly monitored on public lands, the potential for short-term and long-term adverse effects to all kinds of cultural resources becomes realized. Damage from OHV use can be direct, indirect, or both. For example, an archeological site's physical components can be directly impacted by irresponsible OHV use: vehicle "free-play" can accelerate the erosion of prehistoric soils or create artifact damage from vehicle crushing. Of course, it is the responsibility of the OHV user to follow designated trails and only use "open areas" for vehicle free-play. However it is also the responsibility of the Agency providing OHV use to clearly identify those designated trails and open areas. As a multiple-use Agency, it is one of the BLM's missions to provide safe OHV recreation where feasible and manageable.

The presence of OHV recreation is well established in California and the Clear Creek Management Area since the 1960s. During the early 1980s, the State of California Department of Parks and Recreation completed a study near the CCMA to augment the OHV recreation already occurring in the region. The report known as the Martin Ranch State Vehicular Recreation Area (SVRA) Feasibility Study (1984) reviewed the known cultural resources information west of the CCMA. The study included some limited reconnaissance of the region in addition to the background data. The final report included recommendations and suggested mitigation strategies for cultural resources should the SVRA go forward. Their comments were brief but revealing in "Mitigation Measures 1:"

> All property north of the Cantua Creek watershed, including Peppergrass Flat, will be closed to OHV use or traded to BLM…In addition, the Joaquin Rocks area and the Arroyo Cantua battle site, including other recorded archeological sites along Cantua Creek, will be closed to OHV use or traded to BLM (DPR 1984:35).

Two years later the BLM approved the Ciervo Hills - Joaquin Rocks Cultural Resource Management Plan, which cited a California Department of Parks and Recreation archeological inventory conducted for the proposed Martin Ranch SVRA study in 1985 by State Parks Archaeologist Herb Dallas. The State Parks inventory identified twenty-four new archeological sites in the Cantua Creek area. The recognition that these sites represented one of the state's least understood groups was regarded as "significant when considering protection and conservation of these resources" (USDI 1986b:3). The proposed Martin Ranch SVRA was never approved for implementation due to costs associated with the management and protection for threatened and endangered species, cultural resources, and air quality.

In the late 1980s and early 1990s, the BLM continued to plan for OHV recreation in the Hollister Field Office Area, with the CCMA the focus of the planning and studies to understand OHV-related impacts and management costs. A three-part Clear Creek OHV Feasibility Study was conducted by the Hollister Field Office, the results of which were somewhat incorporated into the 1995 CCMA RMP planning process. The study represented the "examination of the feasibility of developing OHV recreation outside the hazardous asbestos area in the Clear Creek Management Area" (USDI 1991:1).

The study considered twelve different factors: (1) soil erosion, (2) cultural resources, (3) threatened and endangered plants, (4) paleontological resources, (5) riparian areas, (6) water quality, (7) dust emission regulations, (8) non-OHV forms of recreation, (9) visual resources, (10) livestock operations, (11) active mines and claims, and (12) adjacent land uses (USDI 1991:1-3). For the purposes of the study, a 102,000 acre area was divided into seven subareas for analysis: Byles Canyon, Larious Canyon, San Carlos Bolsa, Cantua Creek, Joaquin Ridge, White Creek, and Condon Peak (USDI 1991:4).

In the cultural resources segment of the study, the general recommendation was that even though each subarea was "certain to contain some cultural resources, they are certainly many alternatives to avoid impacting archaeological sites" (USDI 19991:16). It was further recommended that site-specific inventories be completed before any kind proposed surface disturbances, and if "any significant sites result from those surveys, avoidance of those sites is to take precedent over mitigation" (USDI 1991:17).

More specific recommendations from the study pertaining to cultural resources and proposed OHV recreation outside of the HAA and ACEC were:

> Byles Canyon Study Area - "In the event that increased OHV use is planned for the Clear Creek Canyon mouth, the remaining sites located nearby should first be evaluated. Access to the immediate area surrounding these sites should be restricted until they are evaluated" (USDI 1991:18).
>
> White Creek - "In fact, these sites have already suffered extensively from looting; increased access would aggravate the situation. In the event that OHV use will be allowed in the area, measures should be taken (fencing) to prohibit any access" (USDI 1991:19).
>
> Condon Peak - "The south-southwest portion of the study area along Los Gatos Creek contains the highest potential for habitation sites. Many habitation sites known to contain burials are situated on private land along Los Gatos Creek. In fact, that potential exists along all of the bigger watercourses in the OHV study area (see White Creek)" (USDI 1991:19).

These conclusions are still valid and would be applicable to any Alternative that proposes OHV recreation beyond the Current Management situation.

Probably one of the better studies related to the characterization of potential negative effects and impacts from OHV-based recreation on cultural resources is "The Effects of Off-Highway Vehicles on Archaeological Sites and Selected Natural Resources of Red Rock Canyon State Park" (2007) by

Associate State Archaeologist Mike Sampson for California State Parks. This study was initiated to investigate OHV use and its effects upon cultural and natural resources within Red Rock Canyon State Park in Kern County and to identify "some practical measures to address problems associated with off-highway vehicle use" that may apply to the management of vehicular recreation in State Parks or other OHV use areas (Sampson 2007:1).

Some of the earliest OHV effect studies on cultural resources were performed by the BLM in California in the 1960s and 1970s. OHV-related damage was identified as the since "significant source of damage to archaeological sites and other historic properties, second only to development" (Sampson 2007:3). It became understood that OHV recreational use had the unintended consequence of enabling artifact collectors and looters to access vast areas of public land. As OHV technology improved, some lands which were formerly difficult to access became within reach. Irresponsible OHV use was documented as the primary cause for the "inadvertent or purposeful destruction of significant cultural features," occurring most frequently in areas closed to roads or campgrounds (Sampson 2007:4).

The Red Rock Canyon study identified thirty-six archeological sites within the State Park that were traversed by Park roads or "informal" OHV trails. Thirteen of the sites were prehistoric habitation locations with another eleven sites identified as prehistoric lithic scatters; the remaining twelve sites were historic camps or other resource. In fact, a historic stage station site is "regularly crossed by OHV traffic" (Sampson 2007:5).

Sampson's description of visitor use and recreation at Red Rock Canyon State Park mirrors the recreational activity that occurs at some of the historic sites in the CCMA, on both private and public land:

> The site of Cudahy Camp has been impacted by modern-day camping and vehicle activity. Illegal target shooting would occur at this location and considerable trash has been left on-site by campers. The campers damage the remains of the historic buildings and displace surface artifacts. The site has now been closed to camping. OHV users perform unauthorized hill climbs on the edge of the residential area that leave the bare slopes scarred and highly susceptible to erosion (Sampson 2007:8).

Although there was physical damage at each cultural resource, 17 of the 36 archeological sites in the study (46%) exhibited "pronounced damage resulting from regular OHV use and erosion that follows from vehicular activity." This more intensive damage included "measurable deflation of the sites within road beds or the trail treads, degradation of cultural deposits, vehicle scars resulting from off-trail riding, road damage requiring extensive and costly restoration efforts, loss of soils in measurable volumes, loss of vegetation, creation of deep gullies, displacement and damage to artifacts and cultural features, modern-day trash left on-site, [and] alteration of natural hydrologic patterns" (Sampson 2007:9).

4.13.2.2 Mitigation Measures for Cultural Resources

If a proposed action or an existing land use has the potential for adversely or otherwise negatively affecting the characteristics which contribute to the Use Allocation determined for a cultural resource (or the qualities which qualify a property for the National Register of Historic Places), the BLM shall ensure that appropriate conservation treatment or mitigation measures are carried out. The preferred strategy for treating potential adverse effects on listed or eligible properties is avoidance. If avoidance is imprudent or infeasible, a range of alternative physical and administrative conservation measures are be considered. The BLM employs these conservation measures as management tools to protect and mitigate impacts to cultural resources.

Physical Conservation

Physical conservation measures can be applied *directly* to the cultural property or *indirectly* to the general site area, such as signing, fencing, or patrolling. The following methods describe the direct physical conservation measures used by the BLM:

Stabilization - Structural and material stabilization techniques introduce chemical, mechanical, or structural elements to retard the deterioration of a variety of cultural resources.

Erosion Control (on-site) - Examples of on-site erosion control measures include recontouring a site's surface to promote better drainage, and backfilling illegally excavated areas.

Fire Control (on-site) - Effective on-site fire control is limited primarily to preventive measures.

Detailed Recording - This non-destructive technique may include the use of detailed mapping using surveying equipment, photogrammetry, aerial and standard photography, use of electronic equipment such as magnetometers, and narrative descriptions.

Relocation - This alternative is largely limited to structures and to some forms of rock art, such as boulders containing petroglyphs. Relocation of structures usually is expensive and requires special skills and equipment.

Adaptive Reuse of Structures - The adaptive reuse of historic structures should be considered before selecting some more potentially destructive methods (such as relocation). After rehabilitating a structure consistent with its historic character it may be usable in its original location.

Archeological Data Recovery - Archeological data recovery includes those techniques that maximize controlled collection and/or excavation of cultural materials and data analysis. Excavation should be attempted only when other protection alternatives are not adequate or feasible to protect the scientific information contained in the property.

Indirect conservation measures refer to the second type physical conservation techniques that do not directly modify the cultural resource. For this reason they are often preferable to direct physical conservation methods. The following strategies are indirect methods used by the BLM:

Signs - Under conditions of active or potential vandalism, cultural properties should be adequately signed, identifying the protection afforded by law. Signs should be placed so as not to intrude upon the property or to draw unwanted attention to it. Interpretive signs may also be appropriate for some properties and may protect them by promoting conservation ethics.

Fences and Gates - Fences, barriers, and gates of various materials can be used alone or in combination with other methods to restrict access. The selection of designs and materials must avoid unwarranted intrusion on the property. Maintenance costs and safety requirements must also be considered in the design.

Patrols and Surveillance - Patrols and surveillance are determined by and scheduled according to the nature of the resource, degree of threat present, and the uses appropriate for the cultural resources involved. Irregularly scheduled patrols are among the best means of deterring looting, vandalism and other unauthorized uses. Surveillance can be accomplished through "stake-outs" or remote detection systems; however, installation of surveillance equipment should not impair or compromise the integrity of the cultural resources.

Erosion Control (off-site) - Flooding, seepage, major runoff, movement of soils by wind action, and other potential erosion problems can be monitored and controlled. Erosion control performed off-site can generally be accomplished at lower cost and with fewer disturbances to the resource than on-site erosion control.

Fire Control (off-site) - An active fire protection program should include cultural resource values in pre-suppression, suppression, and post-suppression activities. Periodic inspections at historic sites may be undertaken to determine potential fire hazards. Pre-suppression measures include fire retardant treatments, reduction of fuel, construction of fuel breaks, and site-specific fire action plans. Post-suppression analysis should consider physical conservation measures needed to restore the setting and/or rehabilitate the resource damaged by fire and suppression activities.

If physical conservation measures are applied to a cultural resource, then it is important that consider that maintaining cultural resource integrity is usually preferable to resource relocation or the use of data recovery techniques as these methods will permanently alter the nature of the resource, perhaps adversely. Physical conservation measures and methods should be carefully selected to fit the nature of the property and the data being protected, to be reasonably reversible, and disturb the least practical amount of the property.

Long-term costs and feasibility of site maintenance must be considered in project design and the effectiveness of implemented conservation measures should be routinely monitored. If a cultural property that is scientifically significant cannot be preserved in place, the loss of research potential can sometimes be reduced through various data recovery techniques with well-defined study topics and data collection priorities related to the resource.

Administrative Conservation

Administrative conservation measures can also mitigate impacts to cultural resources. These measures do not involve physically altering the resource and generally cost less to implement and manage than physical protection/mitigation measures. Administrative conservation strategies used by the BLM for cultural resources include:

Withdrawals - Protective withdrawal of lands (43 CFR 2300-2370) means withholding an area from settlement, sale, location or entry under the general land laws and mining laws.

Closures to Public Access and/or Off-Highway Vehicle Use - Areas may be temporarily closed to public use and travel (43 CFR 8364 and 8340) to facilitate special cultural uses or to protect scientific values. Public lands may also be designated as indefinitely limited or closed to the use of OHVs.

Special Designations - Individual cultural properties or districts may be nominated to and listed on the National Register of Historic Places (NRHP) to recognize and reinforce their special management status (36 CFR 60 and 65). Areas of Critical Environmental Concern (ACEC) may also be designated to address special management needs for cultural resources.

Land Acquisitions - State or privately owned portions of Federal cultural properties or adjacent State or private lands may be acquired through exchange, purchase, or deed to maintain site integrity or to provide buffer areas (43 CFR 2200).

Recreation and Public Purposes Act - This Act allows transfer of land to State or local government agencies or other entities (such as historical societies, conservation groups) under a

conditional lease or patent (43 CFR 2740) and can be used to allow other entities to protect and develop cultural properties for public use when it is impractical or infeasible for the BLM.

Easements - BLM may acquire an easement to ensure administrative access to a cultural property or to install physical conservation measures on non-Federal lands to protect BLM-administered cultural properties.

Public Information and Education - Efforts to inform and educate the public about local cultural resource significance and conservation ethics may help decrease vandalism and ensure compliance with use restrictions.

There are several considerations when applying administrative conservation measures as a means of cultural resource management. Implementation of these measures often requires considerable lead-time and support from other resource specialists, professionals, and adjoining land owners or lease holders. The physical environment should also be protected from incompatible visual and structural intrusions by consideration of an appropriate buffer area if necessary. It is important that the immediate setting of the property should be managed in a manner consistent with established resource protection objectives. Lastly, a periodic review of implemented conservation measures is needed to evaluate their long-term effectiveness.

Mitigating Impacts to Cultural Resources from OHV Activity

The General Recommendations from the State Parks study in Red Rock Canyon provided for the protection of cultural resources with achievable goals and mitigation management strategies while affording continued OHV recreation and access (Sampson 2007:10):

Provide a map of Red Rock Canyon State Park to the public that clearly illustrates roads and trails and lists park rules and regulations;

Implement an active program of archeological, biological, and geologic monitoring in the Park and include a provision to study vehicle effects;

Separate OHV use from other recreational pursuits such as, camping, bird watching, observing wildlife, studying plants, seeking solitude, taking photographs, etc., where feasible;

OHV use is incompatible with Indian people conducting ceremonies;

Large boulders or other natural materials, fencing, and road obliteration are the most effective barriers for closing roads and informal or unauthorized OHV trails to protect archeological sites;

Regularly patrol the backcountry.

All of the above management recommendations would be effective for cultural resource protection in the CCMA. Each of these strategies relies on Agency support, user compliance, and regular review of the implemented measures to evaluate their level of success. In fact, several of these methods are already utilized in the CCMA to achieve desired cultural resources conditions.

4.13.3 Impacts and Mitigation Common to All Alternatives

The CCMA was previously inventoried for cultural resources in order to generate baseline data to be used in CCMA planning efforts. Based upon that report and other data accumulated over the years, a comprehensive cultural resources management strategy for the region has been developed with protection

efforts for cultural resources that include site avoidance, physical barriers, site monitoring, and review of proposed undertakings to address potential effects to cultural resources.

Subsequent inventory efforts have been and are currently being performed on a project-specific basis as needed, specifically when a proposed project or event moves beyond those projects/activities not included in the "Exempt Undertakings" section, outlined in Appendix C of the Programmatic Agreement (PA) between the California Bureau of Land Management (BLM) and the California State Historic Preservation Officer (SHPO). The PA is designed for the BLM to "integrate its historic preservation planning and management decisions with other policy and program requirements to the maximum feasible extent in the public interest." The PA meets the Section 106 requirements of the NHPA to "take into account the effects of the agency's undertaking on properties included in or eligible for the National Register of Historic Places" (NRHP) as cited in 36CFR800.1(a).

There are at least four dozen prehistoric and historic archeological sites and localities within the CCMA and nearly as many sites on the lands adjacent to the CCMA Planning Area. Many of these sites and localities have been affected over the past years by mining use and reuse, OHV-related vandalism and erosion, and begin neglect. The most visible archeological resources are the mining landscape and related features related to mercury extraction and processing. Some of these historic mining resources have been evaluated for their cultural values as part of Abandoned Mine Lands (AML) projects concurrent with the PA and National Environmental Policy Act (NEPA).

Although the creation of campsites in the CCMA has affected several prehistoric archeological sites (lithic scatters), the most significant impacts have been from illegal and uncontrolled artifact collection. Collectors have probably removed most of the outstanding examples of Native Californian workmanship from the CCMA, but perhaps there are more examples of their crafts in situ. Likewise, historic mine sites have been collected from or used as firewood and/or target practice by the camping public. A program of archeological site monitoring for parts of the CCMA was implemented by the BLM in 1989 to observe changes to archeological sites from either human or natural causes. Based upon a successful program after four years, the monitoring program was extended and similar efforts were concentrated at other sites. Overall, the sites appear to be in a relatively static condition. No new observable impacts or changes to the sites have occurred since monitoring has been implemented. For example, CA-SBn-167 has been fenced out from the public on either side of Clear Creek road. CA-SBn-170 was fenced out from the public to protect the archeological values and botanical habitat from unauthorized OHV use. No new impacts to either site have been observed since the fence construction.

Demonstrated use conflicts with desired cultural resource management conditions at a particular archeological site or Native American traditional use area can resolved through the use of the Route Designation Criteria (Appendix A), the Barren Designation Criteria (Appendix B) and Best Management Practices (Appendix D) established in the 2006 Clear Creek Management Area Resource Management Plan Amendment and Route Designation Record of Decision (2006). For example, a single "open barren" originally designated for OHV-use on route R2 within the Clear Creek Serpentine ACEC is near a known contemporary Native American traditional use area (continued use of this barren is also likely to negatively affect soils erosion and endangered species). Unintended OHV use off of the designated barren has impacted traditional use activities at this location, but through rider education and better signage for temporary route closures this multiple-user conflict has been resolved. If user conflicts persist at the site (including continued and persistent off-trail OHV usage) then re-designation of routes and/or barrens is permitted and authorized. In conjunction with site monitoring, re-direction of recreation user activities is one of the Best Management Practices available to protect cultural resources.

All of the Alternatives provide for consideration of historic properties consistent with authorities and responsibilities under applicable Federal statutes and their implementing regulations. This includes the analysis of authorized land uses, as necessary and on a project-by-project basis, in terms of their potential

to impact historic properties either directly (construction and other ground-disturbing activities) or indirectly (grazing, recreation, increased use of public land). All Alternatives also recognize the increasing importance of government-to-government consultation with Native American tribes and other concerned parties on specific undertakings involving various authorized land uses. Authorized uses with high potential to directly impact historic properties include tree harvesting, mineral extraction, road and pipeline construction, and facilities construction. Undertakings with moderate potential to directly or indirectly impact historic properties include controlled burns and other vegetation management practices, grazing, and increased traffic on public lands as a result of improved recreational opportunities or other land use programs. Compliance with Section 106 of the NHPA is intended to promote the protection and preservation of historic properties so that authorized use of public lands would not result in adverse impacts to National Register-eligible archeological sites, traditional cultural properties, or built environment resources. However, when avoidance of adverse impacts is not feasible due to overriding project or land use considerations, mitigation measures may be implemented.

4.13.4 Impacts and Mitigation for Alternative A (No Action Alternative)

4.13.4.1 Cultural Resources Management Actions

Archeological and Historic Sites

The guidance for successful route designation within the CCMA was established in the 2006 ROD for the CCMA RMP Amendment. By adhering to the "guiding criteria" affecting access to routes, utilizing applicable management guidance established by the, and relying on a solid route/barren designation methodology that balances science and user need (Cultural and Paleontological Resources review as a potential resource concern, TIER 1), route and barren designation for the CCMA would not adversely affect any cultural resources. Of course as new information is gathered from archeological inventory and excavation, and new ethnographic data is revealed from Native American concerns, future undertakings and projects within the CCMA would address this new data and management strategies would adapt if warranted.

Direct impacts to archeological or historic properties as a result of implementing the Best Management Practices (BMPs) - including enclosing or restricting public access to them - are likely to be negligible. Indirect impacts may occur as a result of drawing unwanted attention (i.e., vandals or collectors) to site locations through placement of fences or barriers intended to protect the resources. These impacts may be avoided by consultation with the Native American community, monitoring fenced areas, or by using natural barriers rather than fences to enclose sensitive areas if feasible. Taking administrative and/or on-the-ground measures to protect historic properties would not result in any cumulative impacts.

In general, Alternative A (No Action) would result in a moderate amount of disturbance to cultural resources.

Native American Values

In close coordination with federally recognized or non-federally recognized tribal groups, work to provide access to public lands managed by the BLM for the purposes of traditional cultural practices involving the maintenance of California Indian sociocultural systems. In some cases, the BLM will attempt to promote access on private lands adjacent to BLM in consultation with neighboring land owners.

4.13.4.2 Mitigation

Redesigning or relocating project components that have the potential to adversely affect historic properties contributes to their protection and would not result in direct, indirect or cumulative impacts.

However, enclosing archeological sites with fencing may result in indirect impacts by drawing unwanted attention (i.e., vandals or collectors) to site locations; Native Americans may also object to the presence of fencing around traditional cultural properties or other traditional use areas. These impacts may be avoided by monitoring fenced areas or by using natural barriers rather than fencing to enclose sensitive areas. No direct or cumulative impacts would occur as a result of enclosing or restricting public access to historic properties.

Mitigation for this Alternative includes measures to protect sites by restricting access or installing fences; monitoring all known archeological sites "at-risk" on public lands for use impacts; and on-site resource interpretation installations.

4.13.4.3 Other Management Actions

Closure of the CCMA since May 1, 2008, has had the unintended consequences of redirecting OHV recreation use to other areas in the Hollister Field Office that had been historically closed to OHV use or not been used for that form of recreation. The Panoche Hills were closed to OHV use in 1970, in particular two-wheeled vehicles, "due to resource deterioration" and the inability to "confine such use to designated areas" (USDI 1978:5). The Tumey and Ciervo Hills to the south were also closed to OHV use. The Kettleman Hills in Fresno County had to be officially closed to OHV use on March 26, 2007, in order to protect existing endangered species habitat on public land and an adjacent sheep grazing lease on public and private land. Since 2008, the Williams Hill area in southern Monterey County has new levels of OHV recreational use never before observed by the BLM. The desire for dedicated OHV recreation areas is understood; however the BLM is a multiple-use agency that must balance several interests - some with a potential to conflict with each other - in one area. The simple prohibition of one land-use activity for a given area does not entirely discourage that use, and in some instances can create new impacts to other areas that had not historically seen such use activities (Figure 4.13-1). It is the responsibility of the BLM to manage public lands "on the basis of multiple use and sustained yield" (FLPMA Sec.102 (7)).

Figure 4.13-1: Example of Self-Documented OHV Trespass in the Panoche Hills October 2008 ("Renegade," South Bay Riders Forum).

One observation to consider under this Alternative relates to the effects of OHV recreation. In the General Comments section from the 2008 Public Scoping Report Clear Creek Management Area Resource Management Plan and Environmental Impact Statement, this comment was submitted by a member of the California Native Plant Society:

> OHV is a large and growing sport. While it is destructive [sic], some public lands should be set aside for that activity. It may be better to keep OHV activity at Clear Creek then to consider another site where the downside of OHV use is not known (USDI 2008).

4.13.5 Impacts and Mitigation Common to Alternatives B, C and D

4.13.5.1 Cultural Resources Management Actions

Archeological and Historic Sites

Nominating eligible sites to the National Register for any areas of high cultural, historical, or archeological significance, along with the research and documentation necessary to justify it, contributes to the protection of historic properties and would not result in any direct, indirect, or cumulative impacts to the resources themselves, if properly implemented. If and when a National Register-eligible archeological site cannot be adequately protected from vandalism or its scientific data value is at risk, BLM may choose to realize significant direct impacts to the site and implement mitigation measures. Management actions would account for adverse impacts from unauthorized excavation and vandalism.

In general, Alternatives B, C, and D would promote the most amount of high-impact activity or development that could result in direct impacts to cultural resources.

Native American Values

Continue to coordinate and consult with federally recognized tribal groups to create better government to government relations for improved access to public lands. Moreover, consultation will continue with non-federally recognized tribes and groups to identify needs and develop better access policies to public lands.

4.13.5.2 Mitigation

Mitigation for these Alternatives includes measures to protect sites by restricting access or installing fences; monitoring all known archeological sites “at-risk” on public lands for use impacts; and on-site resource interpretation installations. Fences or barriers would be used where necessary to protect sites from human caused or other disturbances. Data recovery would be initiated at archeological sites that are unable to be protected with administrative mitigation measures.

4.13.6 Impacts and Mitigation for Alternatives E, F, and G

4.13.6.1 Cultural Resources Management Actions

Archeological and Historic Sites

The management actions would provide beneficial impacts for the protection of cultural resources by reducing adverse impacts from unauthorized excavation and vandalism. This suite of Alternatives would promote and enhance the goals for other use allocations by cooperating with research institutions and avocational societies to the extent possible in development areas.

Cultural resources outreach including on-site resource interpretation installations in the CCMA would increase public awareness of historic properties and of BLM efforts to protect known resources. This management action would not result in any direct adverse impacts to these resources. Indirect or cumulative impacts to the resources themselves may have some minor effects.

An example of the "vehicle tours" component discussed in Alternatives E has already been attempted with some success (Figure 4.13-2). In May 1989 the BLM Hollister Field Office led a tour of "historic, geologic, and archaeological sites" with participants in the Molina Ghost Run, a four-wheel OHV recreation club. The tour included visiting Clear Creek Canyon, Alpine Mine, Picacho Mine, New Idria, a "Prehistoric Indian Site," the San Benito Mountain Natural Area, KCAC Asbestos Mine, and the Gem Mine.

Figure 4.13-2: BLM Jeep Tour for the public in the CCMA (Unknown, USDI BLM).

The concept of creating a visitor-use "park" in the CCMA would also be feasible for cultural resources. A good analogy for this interpretive approach would be the Almaden Quicksilver County Park near San Jose, California (Figure 4.13-3). This 4,152 acre park is operated and maintained by the Santa Clara County Parks Department. The park contains numerous historic features related to mercury mining during the mid to late 19th century, very similar in historic theme to the CCMA and nearby New Idria.

Figure 4.13-3: Santa Clara County Parks Interpreter John Slenter with the visiting public at Mine Hill in Almaden Quicksilver County Park (R. Morris, Santa Cruz Archaeological Society).

In general, Alternatives E, F, and G would promote the least amount of high-impact activities or development and would result in the fewest potential impacts to cultural resources.

Native American Values

Continue to coordinate and consult with federally recognized tribal groups to create better government to government relations for improved access to public lands. Moreover, consultation will continue with non-federally recognized tribes and groups to identify needs and develop better access policies to public lands.

4.13.6.2 Mitigation

Focusing research opportunities into areas favored/planned for future development contributes to the long-term protection of historic properties. By providing increased protection measures and limiting public access to historic properties, these Alternatives would probably result in a minimum level of cumulative impacts on historic properties and nonrenewable cultural resources.

4.13.7 Impacts to Cultural Resources for the Proposed Action

4.13.7.1 Cultural Resources Management Actions

Archeological and Historic Sites

The CCMA was previously inventoried for cultural resources in order to generate baseline data to be used in CCMA planning efforts. Based upon that report and other data accumulated over the years, a comprehensive cultural resources management strategy for the region has been developed with protection efforts for cultural resources that include site avoidance, physical barriers, site monitoring, and review of proposed undertakings to address potential effects to cultural resources.

Subsequent inventory efforts have been and are currently being performed on a project-specific basis as needed, specifically when a proposed project or event moves beyond those projects/activities not included in the "Exempt Undertakings" section, outlined in Appendix C of the Programmatic Agreement (PA) between the California Bureau of Land Management (BLM) and the California State Historic Preservation Officer (SHPO). The PA is designed for the BLM to "integrate its historic preservation planning and management decisions with other policy and program requirements to the maximum feasible extent in the public interest." The PA meets the Section 106 requirements of the NHPA to "take into account the effects of the agency's undertaking on properties included in or eligible for the National Register of Historic Places" (NRHP) as cited in 36CFR800.1(a).

There are at least four dozen prehistoric and historic archeological sites and localities within the CCMA and nearly as many sites on the lands adjacent to the CCMA Planning Area. Many of these sites and localities have been affected over the past years by mining use and reuse, OHV-related vandalism and erosion, and begin neglect. The most visible archeological resources are the mining landscape and related features related to mercury extraction and processing. Some of these historic mining resources have been evaluated for their cultural values as part of Abandoned Mine Lands (AML) projects concurrent with the PA and National Environmental Policy Act (NEPA).

Nominating eligible sites to the National Register for any areas of high cultural, historical, or archeological significance, along with the research and documentation necessary to justify it, contributes to the protection of historic properties and would not result in any direct, indirect, or cumulative impacts to the resources themselves, if properly implemented. If and when a National Register-eligible archeological site cannot be adequately protected from vandalism or its scientific data value is at risk, BLM may choose to realize significant direct impacts to the site and implement mitigation measures. Management actions would account for adverse impacts from unauthorized excavation and vandalism.

Direct impacts to archeological or historic properties as a result of implementing the Best Management Practices (BMPs) - including enclosing or restricting public access to them - are likely to be negligible. Indirect impacts may occur as a result of drawing unwanted attention (i.e., vandals or collectors) to site locations through placement of fences or barriers intended to protect the resources. These impacts may be avoided by consultation with the Native American community, monitoring fenced areas, or by using natural barriers rather than fences to enclose sensitive areas if feasible. Taking administrative and/or on-the-ground measures to protect historic properties would not result in any cumulative impacts.

Although the creation of campsites in the CCMA has affected several prehistoric archeological sites (lithic scatters), the most significant impacts have been from illegal and uncontrolled artifact collection. Collectors have probably removed most of the outstanding examples of Native Californian workmanship from the CCMA, but perhaps there are more examples of their crafts in situ. Likewise, historic mine sites have been collected from or used as firewood and/or target practice by the camping public. A program of archeological site monitoring for parts of the CCMA was implemented by the BLM in 1989 to observe

changes to archeological sites from either human or natural causes. Based upon a successful program after four years, the monitoring program was extended and similar efforts were concentrated at other sites. Overall, the sites appear to be in a relatively static condition. No new observable impacts or changes to the sites have occurred since monitoring has been implemented. For example, CA-SBn-167 has been fenced out from the public on either side of Clear Creek road. CA-SBn-170 was fenced out from the public to protect the archeological values and botanical habitat from unauthorized OHV use. No new impacts to either site have been observed since the fence construction.

The Proposed Action provides for consideration of historic properties consistent with authorities and responsibilities under applicable Federal statutes and their implementing regulations. This includes the analysis of authorized land uses, as necessary and on a project-by-project basis, in terms of their potential to impact historic properties either directly (construction and other ground-disturbing activities) or indirectly (grazing, recreation, increased use of public land). There is also recognition of the increasing importance of government-to-government consultation with Native American tribes and other concerned parties on specific undertakings involving various authorized land uses. Authorized uses with high potential to directly impact historic properties include tree harvesting, mineral extraction, road and pipeline construction, and facilities construction. Undertakings with moderate potential to directly or indirectly impact historic properties include controlled burns and other vegetation management practices, grazing, and increased traffic on public lands as a result of improved recreational opportunities or other land use programs. Compliance with Section 106 of the NHPA is intended to promote the protection and preservation of historic properties so that authorized use of public lands would not result in adverse impacts to National Register-eligible archeological sites, traditional cultural properties, or built environment resources. However, when avoidance of adverse impacts is not feasible due to overriding project or land use considerations, mitigation measures may be implemented.

The management actions would provide beneficial impacts for the protection of cultural resources by reducing adverse impacts from unauthorized excavation and vandalism. This suite of Alternatives would promote and enhance the goals for other use allocations by cooperating with research institutions and avocational societies to the extent possible in development areas.

Cultural resources outreach including on-site resource interpretation installations in the CCMA would increase public awareness of historic properties and of BLM efforts to protect known resources. This management action would not result in any direct adverse impacts to these resources. Indirect or cumulative impacts to the resources themselves may have some minor effects.

<u>Native American Values</u>

BLM would coordinate and consult with federally recognized tribal groups to create better government to government relations for improved access to public lands. In close coordination with federally recognized or non-federally recognized tribal groups, BLM would continue to work to provide access to public lands managed by the BLM for the purposes of traditional cultural practices involving the maintenance of California Indian sociocultural systems. In some cases, the BLM will attempt to promote access on private lands adjacent to BLM in consultation with neighboring land owners.

4.13.7.1 Other Management Actions

Closure of the CCMA since May 1, 2008, has had the unintended consequences of redirecting OHV recreation use to other areas in the Hollister Field Office that had been historically closed to OHV use or not been used for that form of recreation. The Panoche Hills were closed to OHV use in 1970, in particular two-wheeled vehicles, “due to resource deterioration” and the inability to “confine such use to designated areas” (USDI 1978:5). The Tumey and Ciervo Hills to the south were also closed to OHV use. The Kettleman Hills in Fresno County had to be officially closed to OHV use on March 26, 2007, in order

to protect existing endangered species habitat on public land and an adjacent sheep grazing lease on public and private land. Since 2008, the Williams Hill area in southern Monterey County has new levels of OHV recreational use never before observed by the BLM. The desire for dedicated OHV recreation areas is understood; however the BLM is a multiple-use agency that must balance several interests - some with a potential to conflict with each other - in one area. The simple prohibition of one land-use activity for a given area does not entirely discourage that use, and in some instances can create new impacts to other areas that had not historically seen such use activities (Figure 4.13-1).

4.13.7.2 Mitigation

Focusing research opportunities into areas favored/planned for future development would contribute to the long-term protection of historic properties. By providing increased protection measures and limiting public access to historic properties, there would probably be a minimum level of cumulative impacts on historic properties and nonrenewable cultural resources. Redesigning or relocating project components that have the potential to adversely affect historic properties contributes to their protection and would not result in direct, indirect or cumulative impacts.

Mitigation for the Proposed Action includes measures to protect sites by restricting access or installing fences; monitoring all known archeological sites "at-risk" on public lands for use impacts; and on-site resource interpretation installations. However, enclosing archeological sites with fencing may result in indirect impacts by drawing unwanted attention (i.e., vandals or collectors) to site locations; Native Americans may also object to the presence of fencing around traditional cultural properties or other traditional use areas. These impacts may be avoided by monitoring fenced areas or by using natural barriers rather than fencing to enclose sensitive areas. No direct or cumulative impacts would occur as a result of enclosing or restricting public access to historic properties. Data recovery would be initiated at archeological sites that are unable to be protected with administrative mitigation measures.

4.13.8 Cumulative Effects

Cumulative effects on archaeological sites, traditional cultural properties, and historic resources are caused by impacts (both mitigated and non-mitigated) that can occur over a long period of time, resulting in the gradual but permanent loss of archaeological data as well as the diverse culture history represented by those properties. In this sense, cumulative losses of cultural resources in the project area also have the potential to indirectly affect Native American groups and various other populations with a history of settlement and land use in the region. Specific site types that embody this culture history are prehistoric habitation and resource procurement sites, rock art, sacred sites, mission-related sites, and historic ranching, mining, and agricultural sites. While impacts to historic properties may be considered "mitigated" by the retrieval of scientific data from archaeological sites, or by the recovery of historical data present in built resources (e.g., buildings, structures, landscapes), the cultural heritage represented by these sites is a nonrenewable resource whose loss cannot be mitigated and thus constitutes a major and unavoidable negative cumulative impact.

All of the management alternatives, including the Proposed Action, include policies and actions to protect historic properties and promote/enhance their preservation management in conjunction with Sections 106 and 110 of the NHPA and other applicable Federal statutes and regulations, including the Federal Land Policy and Management Act of 1976 requirement to manage public lands in a manner that would "protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values." There are provisions for the identification of historic properties in the Planning Area, for the protection (through monitoring and/or enclosure) of all historic properties determined to be at risk from both authorized and unauthorized uses, and for data retrieval (excavation) of sites that can no longer be adequately protected. Although there is some potential for certain protective

measures (e.g., fencing) to draw unwanted attention to sites or to restrict access to traditional use areas, if properly implemented, site monitoring and other security strategies are generally beneficial and do not result in direct, indirect, or cumulative impacts to the resources.

While cumulative effects on cultural resources are difficult to predict, increased or strengthened management programs for the protection and long-term preservation of historic properties will ultimately prevent major cumulative effects from occurring. Under the range of alternatives, and the Proposed Action, there are possible cumulative effects to resource types in areas that receive increased use from potential ground disturbing activities. Under Alternatives A – D, these resource types and areas would require more intensive management and mitigation measures by BLM as demands rise. These demands could be potential uses for energy and mineral, grazing, transportation, recreation, and other approved land use authorizations. Additionally, there are potential cumulative effects from increased public awareness of cultural resources – the risk of vandalism or theft rises. These cumulative impacts cannot be directly measured. Over time, these activities could impact resources permanently and result in an irretrievable loss to non-renewable resources.

Similar protection measures may be necessary under Alternatives E, F, G, and the Proposed Action. However, resource management and use for energy and minerals, grazing, transportation, recreation, and other approved land use authorizations would be less intensive and result in less adverse cumulative effects under these management alternatives and the Proposed Action. The protection or enhancement of historic properties over a long period of time would result in beneficial cumulative impacts to cultural and heritage resources in the Planning Area.

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4.14 Paleontological Resources

4.14.1 Introduction

4.14.1.1 Management Responsibilities

Planning and management actions for paleontological resources on BLM lands are implemented in accordance with BLM Manual 8270 and Handbook H-8270-1, General Procedural Guidance for Paleontological Resource Management; Management of Museum Collections (DM 411); the Federal Land Policy Act of 1976; the National Environmental Policy Act of 1969; and other specific Federal regulations (outlined in DM8270). BLM policy laid forth in these guidelines is to promote the scientific, educational, and recreational uses of fossils on public lands; mitigate resource conflicts; and develop strategies to regularly monitor public lands where important paleontological localities have been identified.

Land use planning for paleontological resources includes the identification of areas and geologic units containing paleontological resources and an evaluation of the potential of areas to contain vertebrate fossils or noteworthy occurrences of invertebrates or plant fossils. Knowledge of geologic units and the kinds and quality of the fossils produced by such units is critical for proper management.

4.14.2 Overview of Impacts and Mitigation Measures

4.14.2.1 Impacts to Paleontological Resources

All BLM programs that may have an adverse impact on paleontological resources through their actions or authorizations are responsible as benefiting activities for funding any necessary resource inventories, evaluations or other work needed to avoid or mitigate adverse impacts on paleontological resources. In rare instances, paleontological resources may be found in association with cultural resources. Such occurrences fall under the provisions of the Archeological Resources Protection Act. In the event of such an occurrence the BLM will evaluate the discovery and determine an appropriate course of action that will safeguard both the paleontological and archeological materials.

<u>Authorized Land Use Actions and Permitted Fossil Collection</u>

Impacts from authorized land use management actions would be negligible because this activity is regulated through a permitting process. Potential impacts are addressed in mitigation measures required by the specific land use authorization or use permit.

Paleontological resources have high public education and recreation values. Such values can be enhanced by publishing guides to selected collecting areas and developing interpretive trails. Working collaboratively, BLM Paleontologists and Recreation Specialists can develop responsible and outstanding recreational and educational opportunities involving paleontological resources that will enhance public understanding of fossils and the science of paleontology, and showcase BLM's stewardship role.

Minerals management can have both positive and negative effects on paleontological resources. Mineral development and related activities, such as road building, can expose new fossil localities. Onshore Oil and Gas Order No. 1 provides the means, where necessary, to protect paleontological resources which may be adversely impacted by mineral development. Fossils are not locatable under the mining laws.

Finally, the management of paleontological resources shall be considered in Land Use Planning and Environmental Review by the BLM in accordance with appropriate laws and regulations.

Unauthorized Land Use Actions and Non-Permitted Fossil Collection

Impacts to fossil resources from unauthorized land use actions should be negligible given the paleontological sensitivity of geological units within the CCMA Planning Area. This is also applicable to possible non-permitted collection of vertebrate or otherwise scientifically significant fossils. However, important paleontological values outside the Planning Area could be impacted from unauthorized uses.

4.14.2.2 Mitigation Measures for Paleontological Resources

Any field surveys and/or inventories intended to protect paleontological resources will be targeted to specific areas or be issue driven as needed. Adverse impacts to paleontological resources shall be mitigated as necessary on a case-by-case basis. Mitigation requirements apply primarily to vertebrate fossils, however where noteworthy occurrences of invertebrate or plant fossils are known or expected, the same planning and mitigation procedures will be followed. Factors such as locality or specimen significance, economics, safety, and project urgency will be considered when developing mitigation measures. Additional mitigation measures (if necessary) would be developed and implemented as timely as possible so as not to delay project actions.

The preferred mitigation technique is to change the project location based on the results of field survey. If relocation will eliminate impacts and is acceptable to all parties, then approval for the project to proceed may then be granted. When avoidance is not possible, appropriate mitigation may include excavation or collection (data recovery), stabilization, monitoring, protective barriers and signs, a combination of the above, or other physical and administrative protection measures.

Physical Conservation

Physical conservation measures can be applied *directly* to the paleontological resource or *indirectly* to the general site area, such as signing, fencing, or patrolling. The following methods describe the direct physical conservation measures used by the BLM:

> Erosion Control (on-site) - Examples of on-site erosion control measures include re-contouring a site's surface to promote better drainage.
>
> Detailed Recording - This non-destructive technique may include the use of detailed mapping using surveying equipment, photogrammetry, aerial and standard photography, use of electronic equipment such as magnetometers, and narrative descriptions.
>
> Data Recovery - Includes those techniques that maximize controlled collection and/or excavation of paleontological materials and data analysis.

Indirect conservation measures refer to the second type physical conservation techniques that do not directly modify a paleontological resource. For this reason they are often preferable to direct physical conservation methods. The following strategies are indirect methods used by the BLM:

> Signs - Under conditions of active or potential vandalism, areas should be adequately signed, identifying the protection afforded by law. Signs should be placed so as not to intrude upon the property or to draw unwanted attention to it. Interpretive signs may also be appropriate for some properties and may protect them by promoting conservation ethics.
>
> Fences and Gates - Fences, barriers, and gates of various materials can be used alone or in combination with other methods to restrict access. The selection of designs and materials must

avoid unwarranted intrusion. Maintenance costs and safety requirements must also be considered in the design.

Patrols and Surveillance - Patrols and surveillance are determined by and scheduled according to the nature of the resource, degree of threat present, and the uses appropriate for the resources involved. Irregularly scheduled patrols are among the best means of deterring vandalism and other unauthorized uses. Surveillance can be accomplished through "stake-outs" or remote detection systems; however, installation of surveillance equipment should not impair or compromise the integrity of the cultural resources.

Erosion Control (off-site) - Flooding, seepage, major runoff, movement of soils by wind action, and other potential erosion problems can be monitored and controlled. Erosion control performed off-site can generally be accomplished at lower cost and with fewer disturbances to the resource than on-site erosion control.

Fire Control (off-site) - An active fire protection program should include paleontological resource values in pre-suppression, suppression, and post-suppression activities. Periodic inspections may be undertaken to determine potential fire hazards. Pre-suppression measures include fire retardant treatments, reduction of fuel, construction of fuel breaks, and site-specific fire action plans. Post-suppression analysis should consider physical conservation measures needed to restore the setting and/or rehabilitate the resource damaged by fire and suppression activities.

Administrative Conservation

Administrative conservation measures can also mitigate impacts to paleontological resources. These measures do not involve physically altering the resource and generally cost less to implement and manage than physical protection or mitigation measures. Administrative conservation strategies used by the BLM for fossil resources include:

Withdrawals - Protective withdrawal of lands (43 CFR 2300-2370) means withholding an area from settlement, sale, location or entry under the general land laws and mining laws.

Closures to Public Access and/or Off-Highway Vehicle Use - Areas may be temporarily closed to public use and travel (43 CFR 8364 and 8340) to protect scientific values. Public lands may also be designated as indefinitely limited or closed to the use of OHVs.

Special Designations - Areas of Critical Environmental Concern (ACECs) can be designated to address special management needs for paleontological resources.

Easements - BLM may acquire an easement to ensure administrative access to a paleontological locality or to install physical conservation measures on non-Federal lands to protect BLM-administered paleontological resources.

Public Information and Education - Efforts to inform and educate the public about local paleontological resource significance and conservation ethics may help decrease vandalism and ensure compliance with use restrictions.

4.14.3 Impacts and Mitigation Common to All Alternatives

If significant fossil resources were present in the CCMA, recreational activities such as motorized or non-motorized exploring off of designated roads and trails would create a need for protective measures to preserve fossil resources and mitigate adverse impacts. Unauthorized collection of paleontological resources would be a direct and permanent impact because such resources are non-renewable and irretrievable.

Paleontological resources can be directly impacted by construction and development activities; collection of fossils for scientific, educational, or recreational use; by trampling of animals and humans; and by natural erosion processes. Impacts from construction and development activities could be mitigated with appropriate measures specified in the required permitting documents, typically associated with energy and minerals or other land use authorizations. Soil erosion and floods could impact paleontological resources by exposing surfaces, particularly on steep slopes. Once exposed, these fossils would gradually degrade and/or be permanently impacted from unauthorized collection. The installation of temporary fences along margins of camp sites or other developments to eliminate project-related impacts to undisturbed areas would be required. If necessary, site-specific mitigation would be initiated, and fencing might be made permanent. Contract studies could be required if impacts to significant sites could not be avoided. Relocation of proposed developments would be preferred to avoid impacting significant paleontological sites and localities.

4.14.4 Impacts and Mitigation for Alternative A (No Action Alternative)

4.14.4.1 Paleontological Management Actions

Impacts from authorized paleontological management actions would be negligible because these activities are regulated through a permitting process. Potential impacts are addressed in mitigation measures required by the specific use authorization or use permit.

Impacts to vertebrate fossil resources from unauthorized use or collection should be negligible given the paleontological sensitivity of geological units within the CCMA Planning Area. This is also applicable to the possible non-permitted collection of otherwise scientifically significant fossils, including invertebrate or botanical specimens.

4.14.4.2 Mitigation

Mitigation measures would be incorporated into management actions, such as installing temporary fences, maintaining buffer zones, relocating development, data recovery, or even stabilizing and rehabilitating soils. Additional mitigation measures are outlined in other Chapters of the Environmental Consequences sections of this RMP.

4.14.4.3 Other Management Actions

Impacts would include the authorized and unauthorized uses from construction and development activities (energy and minerals and other land use authorizations), soils erosion, grazing, recreation, transportation - wherever soil disturbances occur. Unless mitigated, these activities would cause permanent long-term impacts on non-renewable and irretrievable paleontological resources.

Paleontological resources would benefit from soil resource management actions that control erosion and avoid surface disturbance on steep slopes or during wet periods. Due to high erosion rates on steep slopes in the Planning Area, soil resource management actions would reduce potential impacts to significant paleontological resources from moderate and minor to negligible and would cause a beneficial impact by

mitigating the constant exposure of subsurface materials, including new fossils. If exposed for long periods of time, these fossils would erode from the confining sediments and gradually deteriorate.

4.14.5 Impacts and Mitigation Common to Alternatives B, C and D

4.14.5.1 Paleontological Management Actions

Impacts would be similar to those in Alternative A.

4.14.5.2 Mitigation

Mitigation measures would be similar to those in Alternative A. Require the installation of temporary fences along margins on developments to eliminate off-site project-related vehicle impacts to undisturbed areas. Site-specific mitigation would be initiated, if necessary, through contract studies if impacts to significant sites could not be avoided. Impacts from this management action would depend upon the significance of the resource being impacted in areas where construction would continue.

4.14.6 Impacts and Mitigation for Alternatives E, F, and G

4.14.6.1 Paleontological Management Actions

Impacts would be similar to those in Alternative A. These Alternatives promote less high-impact activity and more protection of ecological resources; this may reduce the potential for major impacts to paleontological resources (if present).

4.14.6.2 Mitigation

Mitigation measures would be similar to those in Alternative A. Should natural erosion threaten the integrity of significant fossil resources in the Planning Area, efforts would be made to stabilize and rehabilitate these resources on a case-by-case basis. Impacts from this alternative would depend upon the scientific significance of the resources stabilized. Ideally work would be accomplished with preservation groups or societies to conserve the resource in situ.

4.14.7 Impacts to Paleontological Resources for the Proposed Action

If significant fossil resources were present in the CCMA, recreational activities such as motorized or non-motorized exploring off of designated roads and trails would create a need for protective measures to preserve fossil resources and mitigate adverse impacts. Unauthorized collection of paleontological resources would be a direct and permanent impact because such resources are non-renewable and irretrievable.

Paleontological resources can be directly impacted by construction and development activities; collection of fossils for scientific, educational, or recreational use; by trampling of animals and humans; and by natural erosion processes. Impacts from construction and development activities could be mitigated with appropriate measures specified in the required permitting documents, typically associated with energy and minerals or other land use authorizations. Soil erosion and floods could impact paleontological resources by exposing surfaces, particularly on steep slopes. Once exposed, these fossils would gradually degrade and/or be permanently impacted from unauthorized collection. The installation of temporary fences along margins of camp sites or other developments to eliminate project-related impacts to undisturbed areas would be required. If necessary, site-specific mitigation would be initiated, and fencing might be made permanent. Contract studies could be required if impacts to significant sites could not be avoided.

Relocation of proposed developments would be preferred to avoid impacting significant paleontological sites and localities.

4.14.7.1 Paleontological Management Actions

Impacts from authorized paleontological management actions would be negligible because these activities are regulated through a permitting process. Potential impacts are addressed in mitigation measures required by the specific use authorization or use permit.

Impacts to vertebrate fossil resources from unauthorized use or collection should be negligible given the paleontological sensitivity of geological units within the CCMA Planning Area. This is also applicable to the possible non-permitted collection of otherwise scientifically significant fossils, including invertebrate or botanical specimens.

Overall, the Proposed Action promotes less high-impact activity and more protection of ecological resources than the No Action Alternative; thereby reducing the potential for major impacts to paleontological resources (if present).

4.14.7.2 Other Management Actions

Impacts would include the authorized and unauthorized uses from construction and development activities (energy and minerals and other land use authorizations), soils erosion, grazing, recreation, transportation - wherever soil disturbances occur. Unless mitigated, these activities would cause permanent long-term impacts on non-renewable and irretrievable paleontological resources.

Paleontological resources would benefit from soil resource management actions that control erosion and avoid surface disturbance on steep slopes or during wet periods. Due to high erosion rates on steep slopes in the Planning Area, soil resource management actions would reduce potential impacts to significant paleontological resources from moderate and minor to negligible and would cause a beneficial impact by mitigating the constant exposure of subsurface materials, including new fossils. If exposed for long periods of time, these fossils would erode from the confining sediments and gradually deteriorate.

4.14.7.3 Mitigation Measures for Paleontological Resources

Any field surveys and/or inventories intended to protect paleontological resources wouldl be targeted to specific areas or be issue driven as needed. Adverse impacts to paleontological resources shall be mitigated as necessary on a case-by-case basis. Mitigation requirements apply primarily to vertebrate fossils, however where noteworthy occurrences of invertebrate or plant fossils are known or expected, the same planning and mitigation procedures will be followed. Factors such as locality or specimen significance, economics, safety, and project urgency will be considered when developing mitigation measures. Additional mitigation measures (if necessary) would be developed and implemented as timely as possible so as not to delay project actions.

The preferred mitigation technique is to change the project location based on the results of field survey. If relocation will eliminate impacts and is acceptable to all parties, then approval for the project to proceed may then be granted. When avoidance is not possible, appropriate mitigation may include excavation or collection (data recovery), stabilization, monitoring, protective barriers and signs, a combination of the above, or other physical and administrative protection measures.

Mitigation measures would be incorporated into management actions, such as maintaining buffer zones, relocating development, data recovery, or even stabilizing and rehabilitating soils. Require the installation of temporary fences along margins on developments to eliminate off-site project-related

vehicle impacts to undisturbed areas. Site-specific mitigation would be initiated, if necessary, through contract studies if impacts to significant sites could not be avoided. Impacts from this management action would depend upon the significance of the resource being impacted in areas where construction would continue. Should natural erosion threaten the integrity of significant fossil resources in the Planning Area, efforts would be made to stabilize these resources on a case-by-case basis. Ideally work would be accomplished with preservation groups or societies to conserve the resource in situ.

Physical Conservation

Physical conservation measures can be applied *directly* to the paleontological resource or *indirectly* to the general site area, such as signing, fencing, or patrolling. The following methods describe the direct physical conservation measures used by the BLM:

Erosion Control (on-site) - Examples of on-site erosion control measures include re-contouring a site's surface to promote better drainage.

Detailed Recording - This non-destructive technique may include the use of detailed mapping using surveying equipment, photogrammetry, aerial and standard photography, use of electronic equipment such as magnetometers, and narrative descriptions.

Data Recovery - Includes those techniques that maximize controlled collection and/or excavation of paleontological materials and data analysis.

Indirect conservation measures refer to the second type physical conservation techniques that do not directly modify a paleontological resource. For this reason they are often preferable to direct physical conservation methods. The following strategies are indirect methods used by the BLM:

Signs - Under conditions of active or potential vandalism, areas should be adequately signed, identifying the protection afforded by law. Signs should be placed so as not to intrude upon the property or to draw unwanted attention to it. Interpretive signs may also be appropriate for some properties and may protect them by promoting conservation ethics.

Fences and Gates - Fences, barriers, and gates of various materials can be used alone or in combination with other methods to restrict access. The selection of designs and materials must avoid unwarranted intrusion. Maintenance costs and safety requirements must also be considered in the design.

Patrols and Surveillance - Patrols and surveillance are determined by and scheduled according to the nature of the resource, degree of threat present, and the uses appropriate for the resources involved. Irregularly scheduled patrols are among the best means of deterring vandalism and other unauthorized uses. Surveillance can be accomplished through "stake-outs" or remote detection systems; however, installation of surveillance equipment should not impair or compromise the integrity of the cultural resources.

Erosion Control (off-site) - Flooding, seepage, major runoff, movement of soils by wind action, and other potential erosion problems can be monitored and controlled. Erosion control performed off-site can generally be accomplished at lower cost and with fewer disturbances to the resource than on-site erosion control.

Fire Control (off-site) - An active fire protection program should include paleontological resource values in pre-suppression, suppression, and post-suppression activities. Periodic inspections may be undertaken to determine potential fire hazards. Pre-suppression measures include fire

retardant treatments, reduction of fuel, construction of fuel breaks, and site-specific fire action plans. Post-suppression analysis should consider physical conservation measures needed to restore the setting and/or rehabilitate the resource damaged by fire and suppression activities.

Administrative Conservation

Administrative conservation measures can also mitigate impacts to paleontological resources. These measures do not involve physically altering the resource and generally cost less to implement and manage than physical protection or mitigation measures. Administrative conservation strategies used by the BLM for fossil resources include:

Withdrawals - Protective withdrawal of lands (43 CFR 2300-2370) means withholding an area from settlement, sale, location or entry under the general land laws and mining laws.

Closures to Public Access and/or Off-Highway Vehicle Use - Areas may be temporarily closed to public use and travel (43 CFR 8364 and 8340) to protect scientific values. Public lands may also be designated as indefinitely limited or closed to the use of OHVs.

Special Designations - Areas of Critical Environmental Concern (ACECs) can be designated to address special management needs for paleontological resources.

Easements - BLM may acquire an easement to ensure administrative access to a paleontological locality or to install physical conservation measures on non-Federal lands to protect BLM-administered paleontological resources.

Public Information and Education - Efforts to inform and educate the public about local paleontological resource significance and conservation ethics may help decrease vandalism and ensure compliance with use restrictions.

4.14.8 Cumulative Effects

The long-term desired outcome of managing paleontological resources is to ensure their availability for future scientific, educational and/or recreational uses. Such uses include collection, site interpretation, in site preservation, study and exhibition.

Cumulative impacts related to all management alternatives, including the Proposed Action, that could potentially affect paleontological resources within the CCMA include potential unauthorized fossil collection or the mechanical breakage and disarticulation of surface fossils due to trampling by animals or human activities. Cumulative impacts from paleontological management would be negligible.

4.15 Social and Economic Conditions

For ease of reference, the management goals from Chapter 2 are reiterated here:

- The goal for social and economic conditions is to manage public lands to provide social and economic benefits to local residents, businesses, visitors, and future generations.

4.15.1 Introduction

As described in Section 3.15.2, the population of the Planning Area is large by any standard, but especially so relative to the small public land base administered by the HFO. The population within the HFO boundaries is important because it represents the potential user and customer base that could make demands on BLM resources based on the land use allocations identified under the Proposed Action. Nevertheless, the size of the economy associated with the population within the Planning Area would dwarf any of the social and economic contributions made by public land resources.

To better focus on local population pressures and local socioeconomic impacts, two analysis areas were defined within the larger population and economy of the HFO – the Central Coast and the Diablo Range. The Central Coast focuses on Santa Clara, Monterey and Santa Cruz counties. The Diablo Range analysis area focuses on San Benito, Fresno, and Merced Counties and is where CCMA is located.

Table 4.15-1 describes projected population growth in individual counties, the Central Coast analysis area, the Diablo Range analysis area, and California, between 2000 and 2030, representing the period during which the CCMA RMP would be implemented.

Table 4.15-1 Projected Population Growth, 2000–2030, HFO and Local Analysis Areas

County	2000	2010	2020	2030	% Increase 2000-30
Fresno	803,401	949,961	1,114,654	1,297,476	61.5
Merced	210,876	277,715	360,831	437,880	107.6
San Benito	53,770	62,530	73,547	84,727	57.6
Diablo Range	**1,068,047**	**1,290,206**	**1,549,032**	**1,820,083**	**70.4**
Santa Clara	1,691,183	1,844,146	2,006,992	2,152,963	27.3
Monterey	403,636	453,292	505,359	556,962	38.0
Santa Cruz	256,874	271,222	286,044	294,711	14.7
Central Coast	**2,351,693**	**2,568,660**	**2,798,395**	**3,004,636**	**27.8**
CA State Total (mil.)	**34.0**	**39.2**	**43.9**	**48.1**	**41.5**

Growth in the entire 12 county Hollister Field Office boundary is projected to be about 44 percent over this period. The fastest rates of growth would be in those counties that make up the Diablo Range analysis area, which is projected to grow over 200 percent during the period, compared to the 80 percent growth expected in the Central Coast analysis area. These estimates speak to the anticipated continuation of high annual growth rates in the areas of the San Joaquin Valley and Central Valley, where the cost of living, especially the cost of housing, is generally lower. Growth in Santa Cruz County would be very low, whereas Monterey County's growth would be about the same as that of the state. Most of Monterey County's growth would occur in the Salinas Valley, in the communities of Salinas, Gonzales, and Soledad; which are all in close proximity to the CCMA. In addition, population growth in Marina is expected to exceed 100 percent, as development increases on the former Fort Ord lands. (AMBAG 2004).

While annual rates of growth are not very high, less than 1 percent in the Central Coast and less than 2 percent in the Diablo Range, the absolute increase in each area is substantial. Population in the Central Coast analysis area is projected to increase by almost 350,000 and in the Diablo Range by over 500,000. The implication of these numbers is that demand for multiple public land uses, particularly recreation, will also continue to grow.

4.15.2 Overview of Impacts

4.15.2.1 Social and Economic Conditions

Management actions under Alternatives A-F would provide the BLM the ability to provide social and economic benefits from recreation and other multiple uses to local residents, business, visitors, and future generations.

By allowing various levels of opportunity for tourism, production, industry, and/or commodity use of natural resources, social and economic conditions are highly influenced by the range of alternatives and management actions under each resources program, such as recreation, energy and minerals, livestock grazing, and other natural resources with values requiring maintenance and protection by law. The effects of the range of alternatives and management actions on social and economic conditions are described below.

4.15.2.2 Natural Resources Management Actions

Under all alternatives, proposed actions for some resources would have no measurable direct impact on social or economic conditions. These resources are air quality, soil resources, water resources, biological resources, special designations, and paleontological resources. This is not to say that management of these resources is not important to the quality of social and economic life in the HFO; management of natural and public use resources in accordance with established laws and regulations is critical to the long-term social and economic health of local and regional economies and social systems. That level of management is assured though by all alternatives. The management changes proposed for these resources in the alternatives may have some marginal social and economic impacts, but those impacts would not be substantially adverse or beneficial. For that reason, discussion of the socioeconomic effects of changes in CCMA management will be limited to those resources described in Section 3.15 as having some measurable socioeconomic impact – recreation, energy and minerals, livestock grazing, and lands and realty.

4.15.2.3 Cultural and Heritage Resources Management Actions

The BLM has a continuing responsibility under Section 106 of the National Historic Preservation Act and the BLM Nationwide Programmatic Agreement with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers (updated, 2009) to participate in government-to-government consultation with federally recognized tribes regarding cultural resource values on public land. The Programmatic Agreement also provides for consultation with non-federally recognized Native American groups that express interest in using ceremonial sites or traditional resource gathering areas that are now located on public lands. Until recently, the only specific locations in the CCMA identified as having possible cultural/heritage value to area Native American groups are portions of the Condon and San Benito River management zones. Historic mining operations are also dispersed throughout the CCMA, though most of the remnants of these activities have deteriorated through natural processes or been degraded by vandalism and unauthorized collection. Through public outreach and involvement, Native American interests have also identified concerns regarding access to ancestral sites in the Larious Creek watershed of the CCMA. It can also be assumed that Native American groups would place heritage values on any prehistoric or ethnographic period archaeological site containing cultural

artifacts, including human burials. It is also likely that many sites and areas of potential cultural/heritage concern to Native Americans exist on public lands and simply have not been identified to date by either the BLM or the Native American individuals or groups.

Section 2.4.13 addresses specific cultural resources goals, objectives, and management actions for the CCMA under the range of alternatives to encourage and promote Native American access to sites of cultural value on public land. The management changes proposed for these resources in the alternatives may have some marginal social and economic impacts, but the only impacts to Native American interests and other CCMA visitors that would be substantially adverse would be under Alternative G, as a result of the complete loss of access to areas with cultural and heritage resource values.

4.15.2.4 Recreation (and Transportation) Management Actions

Recreation use of public lands is expected to increase as population grows not only in the Central Coast and Diablo Range areas that support local use but also throughout the HFO and California. If recreation use were to grow at a rate proportional to population growth in the Central Coast and Diablo Range areas, over 50,000 annual visits would be expected, compared to the estimated fiscal year 2006 use of 43,000 visits. However, a more likely scenario is that the increase in recreation visits would far exceed population growth as competition for recreation space accelerates and as word of the recreation opportunities on BLM lands in CCMA spreads. If use were to triple during the life of this RMP/EIS, over 90,000 visits annually would be expected. At this level of use, annual expenditures in support of recreation on public lands in the CCMA might reach as much as $4 million in current dollars. Although still an inconsequential level compared to Central Coast and Diablo Range economies, it is likely that some individual businesses, like motorcycle shops in Salinas and Hollister, would continue to rely greatly on OHV recreation activity in CCMA, which currently represents about 80 percent of total use in the CCMA.

Aside from the local motorcycle shops, recreation opportunities in the CCMA would also contribute revenue to other local and regional businesses including restaurants, hotels, sporting goods stores, gas stations, and grocery stores in these communities. Likewise, income from ongoing projects at the CCMA, and the job directly and indirectly associated with them provide benefits to social and economic conditions in the Planning Area.

Although demand for access to hunting would increase as population increases, the level of hunting activity in the Diablo Range area is unlikely to grow even at the rate of population since the activity is tied more to the number of animals rather than the demand for hunting. Hunting clubs and individuals that benefit financially from providing access to hunting on public lands would continue to benefit and may see access fees increase as demand grows. Businesses that would benefit from this activity are likely to be dispersed outside the Diablo Range analysis area.

Beyond any economic benefits of public land recreation, population growth in the face of a static number of opportunities for dispersed, outdoor recreation would cause the value of this type of recreation to be magnified. As indicated in Section 3.15.4, public lands are already among a limited number of venues in the Central Coast and Diablo Range areas that allow residents to escape the press of population and find a sense of isolation. That experience would become even more valued as population grows.

4.15.2.5 Environmental Justice

The requirements for environmental justice review during the environmental analysis process were established by Executive Order 12898 (February 11, 1994). That order declares that each Federal agency is to identify "disproportionately high and adverse human health or environment effects of its programs, policies, and activities on minority populations and low-income populations."

Tables 4.15-3(a-d) describe estimated ethnicity in 2000 and projected future ethnicity in 2010, 2020, and 2030 in the Central Coast and Diablo Range analysis areas. The growth in the percentage of the population described as Hispanic is projected to be very rapid in both the Central Coast and the Diablo Range analysis areas, exceeding even the rapid growth of the Hispanic population for California as a whole. The population described as American Indian would also increase in both areas although the total percentage would remain small. The African American and Asian-Pacific percentages remain smaller than comparable State figures over the period.

Table 4.15-3a Percent Ethnicity in Central Coast and Diablo Range Populations, 2000

Area	Hispanic	African American	American Indian	Asian-Pacific
Central Coast	38.4	2.7	0.5	5.2
Diablo Range	44.8	4.6	0.8	7.8
California	32.6	6.5	0.6	11.3

* Figures differ from those in Table 3.15-5, which are April 2000 Census counts. These are July 1 estimates (California Department of Finance).

Table 4.15-3b Percent Ethnicity in Central Coast and Diablo Range Populations, 2010

Area	Hispanic	African American	American Indian	Asian-Pacific
Central Coast	45.6	2.9	0.6	5.6
Diablo Range	53.5	4.9	1.4	7.2
California	38.7	6.7	1.0	12.4

Table 4.15-3c Percent Ethnicity in Central Coast and Diablo Range Populations, 2020

Area	Hispanic	African American	American Indian	Asian-Pacific
Central Coast	50.5	2.8	0.6	5.9
Diablo Range	57.5	5.1	1.9	6.9
California	43.0	6.7	1.4	13.1

Table 4.15-3d Percent Ethnicity in Central Coast and Diablo Range Populations, 2030

Area	Hispanic	African American	American Indian	Asian-Pacific
Central Coast	55.3	2.7	0.6	6.0
Diablo Range	60.8	5.3	2.4	6.4
California	46.8	6.6	1.7	13.2

Although not projected, the percent of the population with personal income below the poverty level is anticipated to remain extremely high in the Diablo Range area, as shown in Table 3.15-5, and somewhat below the State average in the Central Coast. There are no trends or expected changes in economic patterns that would indicate a change for relative poverty levels in either area.

As indicated in the discussion of socioeconomic impacts, the general effect of BLM management programs and actions under all alternatives is limited. Specific individuals or niche groups that would be affected can be readily identified. None of the anticipated socioeconomic impacts to be experienced by these individuals and groups appear to be negative, nor can the affected parties be categorized by ethnicity. No minority or low-income populations appear to be disproportionately at risk of being affected by public land management.

4.15.3 Social and Economic Impacts under Alternatives A, B, C, and D

4.15.3.1 Recreation

Beyond any economic benefits of public land recreation, population growth in the face of a static number of opportunities for dispersed, outdoor recreation would cause the benefits of these alternatives to be magnified. As indicated in Section 3.15.4, public lands are already among a limited number of venues in the Central Coast and Diablo Range areas that allow residents to escape the press of population and find a sense of isolation. That experience would become even more valued as population grows.

4.15.3.2 Energy and Minerals

Future production of minerals in the CCMA under these alternatives depends more on the demand for the minerals and the extent of recoverable reserves available than on any BLM management strategy.

Important at one time, production of asbestos, bentonite, and mercury from public lands has ceased and is unlikely to start up again. Although demand for oil and natural gas is currently high, production from the Federal mineral estate in the throughout the HFO has been declining, and this would appear to be the trend into the future. Furthermore, the potential for oil and gas development and exploration on BLM-managed lands in CCMA is extremely low and not reasonably foreseeable into the future.

Renewable energy sources will be placing a burden on public lands for solar and wind energy development in areas with high potential. Alternatives A, B, C, and D would allow BLM to consider proposals for mineral entry, oil and gas development; however, the feasibility of these opportunities would depend on sustainability of energy sources in CCMA. Wind energy would be excluded from the ACEC under all alternatives. Therefore, the impacts of energy and mineral management actions on socioeconomic conditions under Alternatives A, B, C, and D would be negligible.

4.15.3.3 Livestock Grazing

Under these alternatives, the same 7,547 animal unit months (AUMs) that are currently available for grazing would remain available and the number of leases would remain unchanged at 14 (see Section 3.15.4). The economic value of the forage grazed would remain at about $109,000 annually in current dollars, an insignificant contribution to the local economy of the Diablo Range area where the CCMA public land grazing occurs. The CCMA portion of the grazing allotments and the associated AUMs would, however, continue to be important to the success of the grazing operations as forage from public lands would continue to provide supplemental income to leaseholders. Therefore, the impacts of livestock grazing management actions on socioeconomic conditions under these alternatives would be negligible.

4.15.3.4 Lands and Realty

Under all alternatives, BLM would continue to authorize rights-of-ways, communications sites, and other land uses consistent with CCMA resource goals and objectives. Also, consolidation of lands into manageable blocks through acquisition, exchange, or disposal would increase the inherent economic efficiency of public land management in that administrative costs per acre should be reduced, and the

potential economic return per acre would be greater for larger holdings than for small. To the extent that larger blocks of public land make them more viable habitat for threatened, endangered, or sensitive species, they become more valuable as lands that can be used as offsetting mitigation. This would make the projected residential and commercial development in both the Central Coast and Diablo Range areas more manageable and less costly because habitat on private lands lost to development could be offset by habitat on public lands. Therefore, lands and realty management actions under Alternatives A, B, C, and D would have long-term beneficial impacts of on socioeconomic conditions.

4.15.4 Social and Economic Impacts under Alternatives E, F, and G

There are several impacts and mitigations related to the range of alternatives due to the similarities in actions that would affect resources or social and economic conditions, including public health and safety. The respective social and economic condition impacted by natural and cultural resources, energy and minerals, livestock grazing, and lands and realty management actions are the same as those described under Alternatives A, B, C, and D. However, the severity of the impacts to social and economic decisions associated with recreation management actions does vary with regard to the particular actions outlined in Alternatives E, F, and G.

4.15.4.1 Recreation Management Actions

Within the visitor shed, motorcycle retail outlets concentrate close to their customers. Table 4.15-4 below reports date from the US Census Bureau Zip Code Business Patterns 2001, The Business Patterns Report does not specify the actual numbers of employees in each business but sorts businesses by classes based on ranges of numbers of employees. At a minimum, the visitor shed for the Management Area in 2001 had 1031 jobs in retail motorcycle businesses.

Communities with comparatively high employment in retail motorcycle sales are most likely to experience long-term adverse effects under these alternatives as motorized recreation on public lands in CCMA decreases significantly. The geographic areas most likely to have economic impacts are those currently with high numbers of employees in retail motorcycle sales. Table 4.15-4 lists the top ten zip code areas provide the largest number of jobs related to retail sales of motorcycles.

Table 4.15-4 – Top ranked communities within the visitor use region by zip code, with the greatest employment in retail sales of new and used motorcycles (NAICS 441221) in 2001. Source: US Census Bureau Zip Code Business Patterns 2001

City	Zip Code Area	Minimum Estimate of Number of Employees
Santa Cruz	95062	62
Modesto	95351	45
Visalia	93292	42
San Francisco	94103	42
Bakersfield	93301	32
Redwood City	94063	30
Livermore	94550	26

City	Zip Code Area	Minimum Estimate of Number of Employees
Hayward	94544	24
San Jose	95112	24
San Francisco	94109	22
Concord	94520	22
Fremont	94538	22
Walnut Creek	94596	22
San Jose	95124	22

California Department of Motor Vehicles tracks information on motor vehicles with green-sticker registrations by zip code by month. This information helps the BLM to know where significant populations of OHV recreational users live and, in the absence of visitor profile data specifically collected from visitors while they are visiting the CCMA, what the demographic profile of visitors is and how it differs or is similar to the population as a whole.

Tables 4.15-5(a-d) show the top-ten ranked zip code areas within the visitor shed region, with: (a) the highest total green-sticker registrations, (b) the highest frequency of registrations among rural communities (populations between 1,000 and 5,000), (c) among suburban communities (populations less than 25,000), and (d) among urban communities (populations greater than 25,000). These areas represent significant populations with vehicles used in OHV and other motorized recreation.

Table 4.15-5 a – Communities with the Highest Number of Registered Green Sticker Vehicles

City	Zip Code	Number of Registered Vehicles
1. Bakersfield	93312	2457
2. Hollister	95023	2318
3. Livermore	94550	1822
4. Tulare	93274	1712
5. Clovis	93611	1705
6. Paso Robles	93446	1542
7. Wasco	93230	1540
8. Gilroy	95020	1415
9. Bakersfield	93308	1371
10. Porterville	93257	1350

Table 4.15-5 b – Rural Communities with the Highest Frequency of Green Sticker Registrations in the Population

City	Zip Code	Per Capita Frequency of OHV vehicles in the population
1. Friant	93626	14.8%
2. Creston	93432	11.1%
3. Hickman	95323	10.6%
4. Prather	93651	10.5%
5. Lebec	93243	10.3%
6. Frazier Park	93225	9.5%
7. La Grange	95329	8.9%
8. Herald	95638	8.6%
9. Linden	95236	8.6%
10.Santa Margarita	93453	8.0%

Table 4.15-5 c – Suburban Communities with the Highest Frequency of Green Sticker Registrations in the Population

City	Zip Code	Per Capita Frequency of OHV vehicles in the population
1. Wilton	95693	7.8%
2. San Martin	95046	7.6%
3. Templeton	93465	6.9%
4. Denair	95316	6.5%
5. Santa Ynez	93460	6.5%
6. Acampo	95220	6.3%
7. Pioneer	95666	6.3%
8. Escalon	95320	6.2%
9. Byron	94514	6.0%
10. Hughson	95326	5.7%

Table 4.15-5 d – Urban Communities with the Highest Frequency of Green Sticker Registrations in the Population

City	Zip Code	Per Capita Frequency of OHV vehicles in the population
1. Bakersfield	93312	6.1%
2. Hollister	95023	4.8%
3. Paso Robles	93446	4.3%
4. Oakley	94561	3.9%
5. Brentwood	94513	3.9%
6. Atascadero	93422	3.8%
7. Clovis	93611	3.6%
8. Visalia	93292	3.6%
9. Sonora	95370	3.2%
10. Bakersfield	93313	3.1%

From comparisons of the communities with high frequency of green-sticker vehicles with the entire population of the visitor shed, the BLM can develop an initial profile of the economic and social characteristics of OHV recreation users and of similarities and differences with the entire population of the visitor shed. Table 4.15-6 displays selected characteristics of communities where OHV ownership and registration are high as contrasted with the entire population of the Management Area visitor shed.

Table 4.15-6 – Comparison of selected demographic characteristics of communities identified in Table 4.15-4, with high frequencies of registered green-sticker vehicles. Source: US Census Bureau, Census 2000 data

Community Groups as Defined in Table 2	Population percentage self-identified as white race	Median Age in Years (both sexes)	Average Number of People in Households	Average Number of People in Families	Population Percent of People > 16 years old and employed	Median Number of Rooms in Houses	Per Capita Income 1999
Top 10 Rural Communities	86.9	39.4	2.7	3.6	41.3	5.2	$20,131
Top 10 Suburban Communities	86.1	38.4	2.3	2.8	43.6	5.7	$25.334
Top 10 Urban Communities	83.8	34.4	3.0	3.8	44.0	5.6	$21,294

Community Groups as Defined in Table 2	Population percentage self-identified as white race	Median Age in Years (both sexes)	Average Number of People in Households	Average Number of People in Families	Population Percent of People > 16 years old and employed	Median Number of Rooms in Houses	Per Capita Income 1999
All Communities in the Visitor Shed	58.5	33.8	2.9	4.3	44.2	4.9	$25,012
All California	59.5	33.3	2.9	3.4	43.0	4.8	$22,711

Significant clusters of communities with high percentages of green-sticker vehicle registration occur in the Bakersfield, San Luis Obispo – Atascadero – Paso Robles, eastern Contra Costa County, and Stanislaus County. In communities with relatively high proportions of green-sticker registrations for off-highway vehicles, the populations appear to differ from the total population of California. The proportion of people who identify themselves as white racially is higher than in the population at large. Also, the populations of the rural and suburban communities where OHVs are most common tend to be somewhat older and have smaller families in comparison the total population of the visitor shed.

Although these alternatives would emphasize low-impact non-motorized recreation, they would not likely have much effect on the demand or the amount of non-motorized recreation use in CCMA. As with Alternatives A, B, C, and D, demand for public land recreation would largely be driven by external factors related to population and the competition for recreation space. The speed at which recreation use grows could be affected by the extent to which BLM management produces favorable recreation experiences and promotes the use of public lands for recreation.

In conclusion, Alternatives E, F, and G would have major long-term adverse impacts on the social and economic conditions of businesses and employees within the communities that specialize in off-highway vehicle sales due to the loss of OHV recreation opportunities on CCMA public lands. However, the overall impact to the social and economic conditions within the Planning Area would be negligible due to the immense size of the populations in the Central Coast and Diablo Range analysis areas.

4.15.5 Impacts to Social and Economic Conditions for the Proposed Action

The impacts of the Proposed Action on social and economic conditions would be the same as those described in Section 4.15.4. Under the Proposed Action, there would be a shift from motorized recreation to non-motorized recreation opportunities. Over the long term, the adverse social and economic impacts associated with the loss of motorized recreation could be offset to some degree by the increase in non-motorized recreation opportunities provided for in the Proposed Action.

Communities with comparatively high employment in retail motorcycle sales are most likely to experience long-term adverse effects under these alternatives as motorized recreation on public lands in CCMA decreases significantly. The geographic areas most likely to have economic impacts are those currently with high numbers of employees in retail motorcycle sales. Table 4.15-3 lists the top ten zip code areas provide the largest number of jobs related to retail sales of motorcycles. These areas represent significant populations with vehicles used in OHV and other motorized recreation.

Table 4.15-5 displays selected characteristics of communities where OHV ownership and registration are high as contrasted with the entire population of the Management Area visitor shed. Significant clusters of communities with high percentages of green-sticker vehicle registration occur in the Bakersfield, San Luis Obispo – Atascadero – Paso Robles, eastern Contra Costa County, and Stanislaus County.

The Proposed Action would emphasize low-impact non-motorized recreation, and this would likely have a positive effect on the meeting the demand for this type of recreation use in CCMA, and adjacent areas, as well as the in region as a whole. Demand for public land recreation would largely be driven by external factors related to population and the competition for recreation space. The speed at which recreation use grows could be affected by the extent to which BLM management produces favorable recreation experiences and promotes the use of public lands for recreation. However, the Proposed Action would have major long-term adverse impacts on the social and economic conditions of businesses and employees within the communities that specialize in off-highway vehicle sales due to the loss of OHV recreation opportunities on CCMA public lands.

4.15.5.2 Energy and Minerals

Future production of minerals in the CCMA depends more on the demand for the minerals and the extent of recoverable reserves available than on any BLM management strategy.

Important at one time, production of asbestos, benitoite, and mercury from public lands has ceased and is unlikely to start up again. Although demand for oil and natural gas is currently high, production from the Federal mineral estate throughout the HFO has been declining, and this would appear to be the trend into the future. Furthermore, the potential for oil and gas development and exploration on BLM-managed lands in CCMA is extremely low and not reasonably foreseeable into the future.

Renewable energy sources will be placing a burden on public lands for solar and wind energy development in areas with moderate to high potential. The Proposed Action would allow BLM to consider proposals for mineral entry, oil and gas development, and renewable energy outside the ACEC; however, the feasibility of these opportunities would depend on sustainability of energy sources in CCMA. Wind energy, geothermal, and solar energy would be excluded from the ACEC under the Proposed Action. Therefore, potential impacts associated with renewable energy exploration and development would be restriction of access to areas where wind or geothermal production potential exists, which may result in minor long term impacts in decreased local production of electricity and decreased local income from local construction and operation employment opportunities associated with these energy developments.

4.15.5.3 Livestock Grazing

Under the Proposed Action, the same 7,547 animal unit months (AUMs) that are currently available for grazing would remain available and the number of leases would remain unchanged at 14 (see Section 3.15.4.4). The economic value of the forage grazed would remain at about $109,000 annually in current dollars, and an insignificant contribution to the local economy of the Diablo Range area where the CCMA public land grazing occurs. The CCMA portion of the grazing allotments and the associated AUMs would, however, continue to be important to the success of the grazing operations as forage from public lands would continue to provide supplemental income to leaseholders. Therefore, the impacts of livestock grazing management actions on socioeconomic conditions under the Proposed Action would be negligible.

4.15.5.4 Lands and Realty

Under the Proposed Action, BLM would continue to authorize rights-of-ways, communications sites, and other land uses consistent with CCMA resource goals and objectives. Also, consolidation of lands into manageable blocks through acquisition, exchange, or disposal would increase the inherent economic efficiency of public land management in that administrative costs per acre should be reduced, and the potential economic return per acre would be greater for larger holdings than for small. To the extent that larger blocks of public land make them more viable habitat for threatened, endangered, or sensitive species, they become more valuable as lands that can be used as offsetting mitigation. This would make the projected residential and commercial development in both the Central Coast and Diablo Range areas more manageable and less costly because habitat on private lands lost to development could be offset by habitat on public lands. Therefore, lands and realty management actions under the Proposed Action would have long-term beneficial impacts of on socioeconomic conditions.

4.15.6 Cumulative Effects

The social and economic changes underway in the Planning Area are expected to continue, regardless of the alternative selected in this EIS, because, as stated earlier, the size of the economy associated with the population within the Planning Area would dwarf any of the social and economic contributions made by public land resources.

However, the role that public lands play in defining quality of life for area residents may especially be affected by demographic changes in the future. Public lands will become increasingly important as remaining reservoirs of open space and as providers of increasingly highly valued visual quality. To the extent that perceptions of quality of life are tied to public health and safety, visual quality, and the maintenance of open space, BLM decisions that affect those elements become more important.

The cumulative impacts for social and economic conditions as they relate to public health and safety, visual quality, recreation opportunity, livestock grazing, and natural and cultural resources, are described in those sections.

4.16 Visual Resources Management

For ease of reference, the management goals from Chapter 2 are restated here:

- The goal for visual resource management is to manage public land actions and activities in a manner consistent with visual resource management (VRM) class objectives.

4.16.1 Introduction

As outlined in Section 3.16.2, visual resource management (VRM) classes are assigned to the various parts of the landscape based on visual characteristics and/or to meet management objectives. These range from preserving a natural landscape and existing characteristics (Class I) to providing for management activities that allow major modification of the landscape (Class IV). While numerous management activities can impact visual values, the most significant impacts are large-scale or cumulative ground-disturbing activities that alter the existing form, line, color, and texture of the existing landscape.

Impacts to visual resources are considered major if they substantially change or degrade the character of the landscape as seen from sensitive viewsheds, or if the allowable modifications exceed VRM classifications. While topography can allow for some landscape modifications, many types of disturbance, such as roads and artificial structures, can dominate the landscape depending on their size, distance, topographic position, presence or absence of screening, and contrast with surrounding conditions. Viewsheds deemed to be of high value are those that have high scenic quality, such as the Joaquin Ridge/Rocks area west of U.S. Interstate 5, or other areas in CCMA with high visual sensitivity due to a large amount of public interest and viewing, such as San Benito Mountain and Hernandez Valley.

Since all BLM-administered lands in the Planning Area have been previously evaluated and been assigned VRM Classes III or IV, with the exception of San Benito Mountain WSA (VRM Class 1), this RMP/EIS will not elaborate on the methodology employed to assign the classifications.

4.16.2 Overview of Impacts

4.16.2.1 Visual Resource Management Actions

Designation of VRM classes for certain geographic areas within the Planning Area is the main variable in determining the level of impacts to visual resources.

4.16.2.2 Other Management Actions

Impacts to visual resources can result from a variety of other management actions, including fire management, recreation, and energy and mineral development.

Wildfire and Prescribed Burns

For all alternatives, management actions would limit bulldozer use on wildfires and prescribed burns in the ACEC due to human health risks, and outside the ACEC, where possible, for other resources concerns. All other actions relating to wildfires and prescribed burns would be designed to maintain a particular area's VRM classification.

The most important effect to visual resources from wildfire and prescribed burns is the modified nature of the landscape following a fire. Charred vegetation, downed timber, and discolored soils and rock can affect the quality of the visual landscape. These effects can be widespread and long-term.

Recreation and Access

Recreation-related activities that can affect visual resources are mainly related to motorized recreational vehicle use. Motorized vehicle routes, existing and new, can adversely affect the visual quality of the landscape. In addition, the development of new trails and visitor facilities can have an effect on the visual quality of an area, although these developments are generally more localized.

Energy and Mineral Development

Potential activities in the CCMA related to energy and mineral development include production of oil and gas, as well as limited saleable and locatable mineral production. However, the potential for development in CCMA in low-to-moderate; and no new oil and gas wells have been drilled in the past 30 years. Furthermore, BLM estimates that no more than 15 exploration and production wells would be drilled within the next 15 to 20 years throughout the Hollister Field Office. The drilling of new wells is most likely in currently producing oil fields outside of the CCMA, including the Coalinga, Jacalitos, Kreyenhagen, Kettleman Middle Dome, and Pyramid Hills in Fresno County; and the Vallecitos, Bitterwater, and Hollister oil fields in San Benito County, where energy and mineral development would coincide with the construction of new pipelines, roads, and processing facilities, which would not conflict with current VRM class designations in CCMA.

While there are only a few areas within the Planning Area that could be considered for potential wind resource development, the most likely area for wind farm siting is on Joaquin Ridge. BLM lands in this region follow the ridgeline of the mountains east of the Clear Creek Management Area. Wind farms can significantly affect the visual character of the landscape due to turbine heights, the “shadow-flicker” phenomenon from rotating blades, and newly built access roads for turbine maintenance. A large portion of Joaquin Ridge was designated as an Area of Critical Environmental Concern (ACEC) in the Hollister RMP (2007), and wind farms would have a major and long-term impact on visual resources in the Joaquin Rocks ACEC, if developed.

4.16.3 Impacts and Mitigation for Alternative A

4.16.3.1 Visual Resource Management Actions

Under Alternative A, VRM classifications would not change since the 1984 Hollister RMP was published. Alternative A would have minor to moderate impacts on visual resources because current management practices do not afford visual protection standards for acquired lands, which would leave these areas in danger of potential deterioration of visual quality.

Additionally, development of new communications sites would be addressed on a case-by-case basis under this alternative. The presence of communication towers could have a moderate to major impact depending on their location and configuration.

4.16.3.2 Other Management Actions

Wildfire and Prescribed Burns

Under Alternative A, approximately 1,250 acres in the Planning Area would be targeted for annual prescribed burns, and 15,500 acres for decadal prescribed burns. This would have a negligible adverse impact on visual resources because it represents current management practices. Other actions under this alternative include limitations on the use of bulldozers on both wildfires and prescribed burns when and where possible, which would result in beneficial impacts to visual quality.

Recreation and Access

New access roads and/or trails are not proposed in the Planning Area under Alternative A, with the exception of limited access improvements in the Condon and Cantua zones. Therefore, recreation-related improvements under Alternative A would have no adverse impact on visual resources

Energy and Mineral Development

Under Alternative A, oil and gas and mineral extraction activities would be considered on a case-by-case basis, and all such developments would be allowed only in areas where appropriate mitigation would protect sensitive areas such as ACECs and known rare, threatened, and endangered habitat. These management actions would have a minor affect on visual resources, which would be localized to the immediate area surrounding the development.

4.16.3.3 Mitigation

Alternative A includes management actions that would serve to mitigate impacts to visual resources, including limiting the use of bulldozers on wildfires and prescribed fires; regulating communication towers to appropriate areas; and restricting motorized vehicles to existing designated routes.

4.16.4 Impacts and Mitigation Common to Alternatives B through G

4.16.4.1 Visual Resource Management Actions

For Alternatives B through G, VRM Class IV standards apply except as otherwise noted.

The San Benito Mountain WSA would be managed as VRM Class I. This designation would preclude the siting of communication towers and other major land-disturbing actions that could affect visual quality. Alternative E would provide the most protection and enhancement of visual resources because the scenic route corridor would be managed as a Class II area, and therefore, this alternative would have the most beneficial long-term impact compared to the other alternatives.

4.16.4.2 Other Management Actions

Impacts from other management actions are described under subsection 4.16.2, “Overview of Impacts.” These include impacts as a result of wildfire and prescribed burns, recreation and access, and energy and mineral development. Issues specific to Alternative B, or C, or D, are described below.

Wildfire and Prescribed Burns

Under Alternatives B through G, approximately 1,450 acres in the Planning Area would be targeted for annual prescribed burns, and 14,000 acres for decadal prescribed burns. This would have a similar level of adverse impact on visual resources as Alternative A due to the higher acreage targeted for annual burns, but lower acreage for decadal burns.

Recreation and Access

Alternatives B through G would allow new motorized access routes to be established in the Planning Area. This would result in minor adverse impacts to visual resources from road cuts. These alternatives also emphasize expansion of existing facilities for communications and for recreation opportunities. These actions would have a negligible impact on visual resources because they would be limited to exiting locations.

Energy and Mineral Development

Under Alternatives B through G, surface disturbance for energy and mineral development would not be allowed in threatened and endangered species habitat, resulting in a beneficial impact to visual resources. In addition, under alternative D, E, F, and G, the Serpentine ACEC would not be available for energy or mineral development, resulting in beneficial impacts to visual resources in these areas.

4.16.4.3 Mitigation

Alternatives B through G have mitigation measures that are included in the management actions identified in Chapter 2. Alternatives B through G include several management actions that would serve to mitigate potential impacts to visual resources. These include implementation of best management practices for road maintenance, watershed restoration, rights-of-ways, and energy and mineral development; and limiting the use of fire retardant drops on exposed rock outcrops and other sensitive visual resource areas that could result in adverse impacts to visual quality of the landscape.

4.16.5 Impacts to Visual Resources for the Proposed Action

4.16.5.1 Visual Resource Management Actions

The San Benito Mountain WSA would be managed as VRM Class I. This designation would preclude the siting of communication towers and other major land-disturbing actions that could affect visual quality. The Proposed Action would provide for protection and enhancement of visual resources because the scenic route corridor would be managed as a Class II area, and therefore, would have moderate beneficial long-term impact.

Additionally, development of new communications sites would be addressed on a case-by-case basis. The presence of communication towers could have a moderate to major impact depending on their location and configuration, however location of new facilities would be restricted to existing sites.

4.16.5.2 Other Management Actions

Impacts from other management actions are described under subsection 4.16.2, “Overview of Impacts.” These include impacts as a result of wildfire and prescribed burns, recreation and access, and energy and mineral development.

Wildfire and Prescribed Burns

Under the Proposed Action, approximately 1,450 acres in the Planning Area would be targeted for annual prescribed burns, and 14,000 acres for decadal prescribed burns. This would have a similar level of adverse impact on visual resources as the No Action Alternative, due to the higher acreage targeted for annual burns, but lower acreage for decadal burns. Other actions would include limitations on the use of bulldozers on both wildfires and prescribed burns when and where possible, which would result in beneficial impacts to visual quality.

Recreation and Access

The Proposed Action would allow new motorized access routes to be established in the Planning Area. This would result in minor adverse impacts to visual resources from road cuts. There would also be an emphasis on expansion of facilities for recreation opportunities. These actions would have a negligible impact on visual resources because they would not be a substantially noticeable segment of the overall landscape.

Energy and Mineral Development

Under the Proposed Action, surface disturbance for energy and mineral development would not be allowed in threatened and endangered species habitat, resulting in a beneficial impact to visual resources. In addition, the Serpentine ACEC would not be available for energy or mineral development, resulting in long term beneficial impacts to visual resources in these areas. Outside the ACEC, oil and gas and mineral extraction activities would be considered on a case-by-case basis, and all such developments would be allowed only in areas where appropriate mitigation would protect sensitive areas such as rare, threatened, and endangered habitat. These management actions would have a minor affect on visual resources, which would be localized to the immediate area surrounding the development.

4.16.5.3 Mitigation

Mitigation measures that are included in the management actions identified in Chapter 2. They include several management actions that would serve to mitigate potential impacts to visual resources. These include implementation of best management practices for road maintenance, watershed restoration, rights-of-ways, and energy and mineral development; and limiting the use of fire retardant drops on exposed rock outcrops and other sensitive visual resource areas that could result in adverse impacts to visual quality of the landscape.

4.16.6 Cumulative Effects

Generally, Federal and State lands that abut or are near BLM lands utilize the BLM VRM system for classifying their holdings, and therefore are not in conflict with VRM designations on BLM lands. Private lands that are next to or near BLM holdings are not subject to VRM and thus are not required to follow VRM guidelines when being developed or utilized for agricultural, industrial, or commercial uses. VRM classifications established for BLM lands have no standing on adjacent private lands and, therefore, would have no off-site impacts on those private lands.

Cumulative impacts to visual resources could occur as development pressure increases on the CCMA public lands. Because Alternatives A, B, C, and D would allow the most high-impact use of all alternatives considered, they also have greater potential for cumulative impacts to visual resources compared to Alternatives E, F, G, and the Proposed Action. These impacts can be minimized by following BMPs and mitigation measures during site selection and construction.

Cumulative impacts could occur from the need for expansion or maintenance of nearby local road systems outside of the Serpentine ACEC, and increased use of roads on private lands due to closure of routes on adjacent BLM-administered lands. Private, County and State road construction and maintenance would have negligible impacts on visual resources from CCMA public lands.

These impacts are mainly limited to highly traveled areas in the CCMA such as the Tucker, Condon, Cantua, and San Benito River Zones. In most areas of the CCMA, it is unlikely that the County road systems within the CCMA would grow significantly, because the dispersed private lands within the Planning Area are already served by County and State roads, and also because of the limited access on public lands available under the range of alternatives, including the Proposed Action. As use of the public lands decreases, these impacts would become negligible.

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4.17 Fire Management

For ease of reference, the management goals from Chapter 2 are restated here:

- The goals for fire management are to (1) establish a fire management program that is cost-efficient and commensurate with threats to life, property, public safety, and resources, (2) use fire to restore and/or sustain ecosystem health, (3) cooperate with communities at risk within the wildland-urban interface to develop plans for risk reduction, (4) cooperate with regional partners in fire and resource management across agency boundaries, and (5) reduce man-made fires, with a special emphasis on reductions in developed areas such as communities, campgrounds, and transportation corridors.

4.17.1 Introduction

Wildland fire management includes using prescribed fire and non-fire fuel treatments to modify vegetation communities to achieve beneficial uses of wildland resources. Federal fire policy requires that appropriate management responses to wildland fire be defined for all Hollister Field Office (HFO) lands in a Fire Management Plan (FMP) that is tiered to the Hollister Resource Management Plan (RMP). The purpose of fire and fuels management is to identify and integrate HFO fire management with participating Federal and State agency fire and fuels management. Under all of the alternatives being considered in this RMP/EIS, management direction would allow fire to continue to be used to achieve desired resources goals and objectives, provided the BLM's fire management program is cost-efficient and commensurate with objectives involving the threat of fire to life, property, public safety, and resources.

4.17.2 Overview of Impacts

This subsection provides background information and an overview of impacts that would be common to all alternatives.

4.17.2.1 Fire Management Actions

Wildland Fire

Wildland fire, defined as any non-structure fire occurring in the wildland, includes *prescribed fire* and *wildfire*. Prescribed fire is used to accomplish resource management objectives. *Prescribed fires* are planned fires ignited by resource managers. Fires that occur from natural causes such as lightning that are then used to achieve management purposes under carefully controlled conditions with minimal suppression costs are known as *wildfirse*. *Wildfires* are unwanted and unplanned fires that result from natural ignition, unauthorized human-caused fire, or escaped prescribed fire. Managing wildfires for multiple resource objectives is currently not identified in the Hollister FMP, 2011)

Prescribed Fire

Prescribed fire would be used for specific management goals in the Planning Area. Prescribed fire could be used to accomplish a number of resource management purposes, such as reducing the amount of hazardous fuels, improving plant species diversity, increasing livestock forage production, abating noxious and invasive weeds, and improving wildlife habitat. Prescribed fire would be used particularly in chaparral vegetation to reduce hazardous fuel, improve wildlife habitat, and enhance watersheds. Multiple resource management objectives would often be achieved concurrently. Prescribed fire would not occur in habitat, cultural, and paleontological resource-sensitive areas.

Prescribed fire could occur either in a defined 'area' or in localized 'burn piles'. 'Area' prescribed fires are used to burn vegetation in place and can vary in the number of acres burned. 'Burn piles' are heaps of woody fuel that are accumulated after a mechanical treatment. Consistency with State fire and air pollution laws and BLM policy would be maintained during prescribed fires. Appropriate smoke management plans would be developed and approved by the local air quality monitoring district for each prescribed fire. Acceptable burn days would be determined in coordination with State and local agencies and minimized during April through September.

Wildfire

Wildfire starts in the Planning Area are caused by either lightning or humans. Approximately 85 percent of wildfire starts are caused by humans. Escaped prescribed fire would be managed as a wildfire. Firefighter and public safety is the first rule in wildfire management. The Hollister FMP goal for all FMUs is to suppress all wildfires 90 percent of the time on initial attack with less than 10 acres burned. An appropriate management response for each wildfire would occur in accordance with management objectives based on current conditions, fire location, and values to be protected. A response could vary from an aggressive initial action to monitoring when all other actions have been carefully examined and control lines have been determined to hold. Appropriate management response strategies would be tailored to address areas of significant constraints, including WUI areas, Areas of Critical Environmental Concern, Wilderness Study Areas, critical habitats, areas of soil instability, and areas of other critical resource constraints. Fire that escapes initial attack (i.e., more than 10 acres at 90 percent of the time past the first 24 hours) would undergo a would undergo a risk analysis to determine the complexity level and suppression alternatives to minimize its severity. Minimum impact suppression tactics would always apply to fire suppression. Sensitive habitat and cultural and paleontological resources would be protected from fire and fire suppression activity.

Non-fire Fuels Management

Fuels management is critical to (1) reducing the risk to life and property from catastrophic fire in the WUI, (2) creating plant community diversity, and (3) reducing fire intensity to protect natural and cultural resources. Prescribed fire is the main tool used by the HFO to manage fuels; however, non-fire fuels management tools are useful in areas where prescribed fire is not appropriate (e.g., the WUI and critical habitats). Non-fire fuels management tools include mechanical and biological controls and herbicides, which are beneficial in fire-sensitive areas. Mechanical fuels treatment is the most common and includes using chain saws, chippers, weed eaters, mowers, and a masticator mounted on an all-terrain vehicle. Woody plant material may be piled and burned as a follow-up treatment. Biological controls such as cattle grazing manage the amount and distribution of fine fuels. Herbicides are used on a limited basis to control unwanted vegetation that eludes prescribed fire or mechanical treatments. Plant debris is left on-site to provide soil organic matter and reduce soil erosion. Non-fire fuels management would be conducted in compliance with State and Federal regulations.

Post-fire and Non-fuel Treatment Rehabilitation and Monitoring

Rehabilitation often is needed after a wildland fire to restore vegetation cover and reduce soil erosion. The need for rehabilitation after non-fire treatment is usually minimal because the treatments are designed to retain protective plant cover to prevent soil erosion. An interdisciplinary resource team would define the specifics for rehabilitation and monitoring after a wildland fire.

The FMP calls for ecosystem rehabilitation after wildland fire. Monitoring by HFO staff would determine the need and action required to restore plant cover and minimize soil erosion. Emergency Stabilization and Rehabilitation (ESR) has occurred on approximately 500 acres per year, with the

majority of acres being maritime chaparral and annual grassland fuel types. Once chaparral and annual grass vegetation has burned, exposed soils would be subject to erosion from the lack of vegetation cover.

Short- and long-term goals are to mitigate fire-related degradation of natural and cultural resources and to minimize threats to life or property resulting from the effects of fire. Short-term ESR actions focus primarily on damage caused by the fire-suppression effort and include constructing protective fences and erosion-abatement structures, seeding, and straw mulching. Native grasses and shrubs are seeded to promote soil stability and reduce weed establishment. Long-term restoration actions include the establishment of native shrub and grasses on site to reestablish pre-fire oak savannah/shrub/chaparral/ annual grass cover. Livestock grazing would not be allowed until the newly established vegetation is of sufficient size to withstand tissue removal and trampling.

Resource specialists would conduct short- and long-term monitoring. Short-term monitoring requirements would include evaluating the implementation of treatment and its initial effectiveness. Long-term monitoring could include vegetative transects or the establishment of permanent photo points, depending on specific project objectives.

4.17.2.2 Other Management Actions

Air Quality

Fire can have a minor to moderate adverse impact on air quality, depending on the size, location, and type of fire. However, prescribed fires are used to manage fuel stock (vegetation); small acreages would be burned on a rotating basis over the course of several years to reduce the available fuel and thus manage fires. Prescribed fire activities would be coordinated with the appropriate APCD, depending on the location of the prescribed fire and applicable smoke management plan, or permit approvals would be obtained before implementing prescribed fires. Prescribed fires offer a long term benefit of reducing the available fuel and thus reducing the potential for future wildland fires.

Water and Biological Resources

Prescribed fires and associated activities would result in a reduction of woody vegetation and herbaceous understory. These activities could temporarily increase soil erosion, which could result in impacts to water quality. However, fuels reduction projects would likely be targeted on woody vegetation outside of riparian areas, so streams would generally be protected from disturbance.

Recreation

Fire prevention strategies can reduce the potential for man-made fires, such as fires started at campgrounds, or at transportation corridors. Prescribed fires could result in area closures during and after fires, depending on location and timing of projects. The closures would likely be temporary and would not have a noticeable impact on recreation opportunity. The burned areas could have a diminished visual quality which could also affect user experience.

Cultural and Paleontological Resources

Investigations and/or clearances would be required prior to conducting fuels reduction activities, such as prescribed fires, in areas where there are known cultural or paleontological resources. Therefore, impacts are expected to be avoided.

Grazing

Livestock grazing can reduce the accumulation of fine fuels and break up their continuity in grazing allotments. This is a beneficial impact to fire management.

4.17.3 Impacts and Mitigation for Alternative A

4.17.3.1 Fire Management Actions

Wildland Fire

Under Alternative A, current wildland fire management direction, suppression guidelines, and general guidance for prescribed vegetation treatments would continue as described in the 1984 Hollister RMP. Alternative A would allow for prescribed fire to provide mosaic patterns of vegetation to protect soil, watersheds, and wildlife, especially mature chaparral dwellers. Prescribed fire would be used to reduce the risk of wildland fire or catastrophic fire through fuels management. Range improvement burning would be conducted on a 10- to 20-year rotation, and fuels reduction burns would be conducted on a 20- to 30-year rotation. Prescribed fire for wildlife habitat improvement would annually burn 5 to 7 percent of a management unit over a 10-year rotation period. Under Alternative A, the HFO may annually burn up to 100 acres using prescribed fire. The decadal goal for the HFO management lands is to burn less than 1000 acres, including both prescribed fire and wildfire. Prescribed fire and smoke management would be conducted in compliance with State fire and air pollution laws and BLM policy. Acceptable burn days would be determined in coordination with State and local agencies and minimized April through September.

Wildfire

Approximately 85 percent of all wildfires in the Planning Area have been human-caused. Under Alternative A, the annual goal for wildland fire management in all FMUs is to suppress all fire starts 90 percent of the time before 10 acres are burned, regardless of the cause of ignition. The Hollister FMP does not allow fire to be managed for multiple resource objectives in the Planning Area to achieve management goals. The decadal goal for wildland fire is 1000 acres and is a combination or prescribed fire and wildfire.

<u>San Joaquin Management Area</u>

Human-caused fire starts have been 90 and 84 percent in the San Joaquin Valley South Continued and San Joaquin Valley South FMUs, respectively.

<u>San Benito Management Area</u>

Eighty-three percent of the fires have been human caused in the Hernandez Valley FMU.

Non-fire Fuels Management

The decadal goal for HFO management lands is to mechanically treat up to 1000 acres equally spread over 10 years.

<u>San Joaquin Management Area</u>

The annual and decadal goals for mechanical treatment in the San Joaquin Valley South Continued and the San Joaquin Valley South FMUs are 15 and 35 acres and 150 and 350 acres, respectively, in the San Joaquin Management Area.

San Benito Management Area

The annual and decadal goals for mechanical treatment in the Hernandez Valley FMU are 12 and 125 acres, respectively.

Post-fire and Non-fire Fuel Treatment Rehabilitation and Monitoring

Alternative A does not specify post-fire and non-fire fuel treatment rehabilitation and monitoring.

4.17.3.2 Impacts from Other Resource Programs

Fire management could result in impacts to other resources, including air quality, water and biological resources, recreation opportunity, and cultural and paleontological resources. These are described in subsection 4.7.2.2.

Alternative A would promote a moderate amount of annual prescribed fire target acres. While the potential impacts from prescribed fire activities are lessened as compared to other alternatives, the threat of wildfire and associated impacts on these resources is then greater.

Livestock grazing can reduce the accumulation of fine fuels and break up their continuity in grazing allotments. Under Alternative A, 57,633 public acres would be grazed in 14 allotments at intensity of 7,547 animal unit months (AUMs).

4.17.3.3 Mitigation

Mitigation measures are contained in the management actions in Chapter 2. Under Alternative A, these include protection of vegetative resources, and prescribed burns.

All Alternatives would require that the HFO comply with new fire management guidance provided by recent Federal wildfire management policy. This guidance includes newly developed fire and fuels management strategies and tactics to comply with the Federal Wildland Fire Management Plan Policy and Program Review (1995 and 2001) and the National Fire Plan: A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy and Implementation Plan (2002). Current Federal policy requires that fire management plans developed for all acres of burnable vegetation on HFO management land comply with these documents and be linked closely with approved resource management plans. This recent policy provides for improved correlation and communication among local, State, and Federal agencies with fire and fuels management responsibilities, which ultimately would reduce the risk of wildfire to life and property and reintroduce fire as a natural component of ecosystems, as appropriate.

4.17.4 Impacts and Mitigation Common to Alternatives B through G

4.17.4.1 Fire Management Actions

Wildland Fire

Under Alternatives B through G, CCMA fire management would be consistent with the Hollister FMP and comply with current Federal wildland fire policy. The FMP would guide the use of prescribed fire in

the Planning Area. The HFO would collaborate with Federal and State land managers, Fire Safe Councils, and private landowners to develop cross-boundary fire management strategies, including the design and implementation of prescribed fire and fuels management projects, and to identify high priority wildfire risk areas. The HFO also would work with WUI communities to reduce wildfire risk and implement a public outreach program to reduce the frequency of human-caused fires. Prescribed fire would be used to mimic the natural role of fire in ecosystems to enhance resource values and to reduce wildfire risks in sensitive areas such as the WUI, critical habitats, and cultural sites. Coordination with Federal, State, and local agencies would minimize smoke in the WUI.

Fire suppression and fuels management activities would minimize impacts on the environment, especially surface water, cultural and paleontological resources, and sensitive habitats. Prescribed fire and smoke management would be consistent with State fire and air pollution laws and BLM policy. Acceptable burn days would be determined in coordination with State and local agencies and would be minimal from April through June.

Wildfire

Alternatives B through G would require developing appropriate management responses to wildland fire, reducing human-caused fires, collaborating with communities to reduce fire risk, and prohibiting the use of heavy equipment and fire retardants in natural and culturally sensitive areas. Similar to Alternative A, Alternatives B through G would require that wildland fire management suppress all fire starts 90 percent of the time before 10 acres are burned, regardless of ignition source.

Non-Fire Fuels Management

Alternatives B through G would require the HFO to collaborate with Federal and State agencies with wildland fire management responsibilities, Fire Safe Councils, communities, and private landowners, where such interaction would be beneficial, to develop cross-boundary fuels management strategies to reduce the risk of fire.

Post-fire and Non-fire Fuel Treatment and Monitoring

Alternatives B through G would require post-fire and non-fire fuels treatment rehabilitation and monitoring. This means establishing a monitoring system that inventories pre-burn species composition and resulting post-fire response; monitoring the effects of fire/fuels treatment; and adjusting the Hollister FMP as needed.

Monitoring after a wildfire, prescribed fire, or non-fire fuels management treatment would identify the need for rehabilitation action. The need for post-fire or fuels treatment rehabilitation would be considered on a case-by-case basis, depending on location and resources to be protected.

4.17.4.2 Other Management Actions

Fire management could result in impacts to other resources, including air quality, water and biological resources, recreation opportunity, and cultural and paleontological resources. These are described in subsection 4.7.2.2, and in more detail below.

Under Alternatives B through G appropriate rehabilitation and monitoring action would be defined in prescribed fire and fuels treatment plans; however, emergency rehabilitation such as slope stabilization, reestablishment of appropriate native plant species, invasive weed abatement, and/or protection of vegetation and natural and cultural resources may be needed following a wildfire.

Livestock grazing under Alternatives B, C, D, and E would reduce the accumulation of fine fuels and break up their continuity in grazing allotments. However, excluding grazing from the Serpentine ACEC under Alternative F and the entire CCMA under Alternative G would have the opposite effect of increasing density of vegetation and fine fuels in allotments, which would have a major long-term negative impact on fire management in CCMA.

4.17.4.3 Mitigation

Mitigation measures are contained in the management actions in Chapter 2. For Alternatives B through G, measures include prevention strategies, coordination with public agencies, and monitoring. Additionally, all alternatives would require that the HFO comply with new fire management guidance provided by recent Federal wildfire management policy. This guidance includes newly developed fire and fuels management strategies and tactics to comply with the Federal Wildland Fire Management Plan Policy and Program Review (1995 and 2001) and the National Fire Plan: A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy and Implementation Plan (2002). Current Federal policy requires that fire management plans developed for all acres of burnable vegetation on HFO management land comply with these documents and be linked closely with approved resource management plans. This recent policy provides for improved correlation and communication among local, State, and Federal agencies with fire and fuels management responsibilities, which ultimately would reduce the risk of wildfire to life and property and reintroduce fire as a natural component of ecosystems, as appropriate.

4.17.5 Impacts for Fire Management for the Proposed Action

Overall, fire management actions for the Proposed Action would provide moderate long term beneficial impacts for land management, by reducing fuels, improving wildlife habitat, and restoring the natural role of fire in ecosystems to enhance resource values and to reduce wildfire risks in sensitive areas such as the WUI, critical habitats, and cultural sites.

Wildland Fire

Under the Proposed Action, fire and fuels management included in the Hollister FMP would be consistent with the CCMA RMP. The FMP would guide the use of prescribed fire in the Planning Area. The HFO would collaborate with Federal and State land managers, Fire Safe Councils, and private landowners to develop cross-boundary fire management strategies, including the design and implementation of prescribed fire and fuels management projects, and to identify high priority wildfire risk areas. The HFO also would work with WUI communities to reduce wildfire risk and implement a public outreach program to reduce the frequency of human-caused fires. Prescribed fire would be used to mimic the natural role of fire in ecosystems to enhance resource values and to reduce wildfire risks in sensitive areas such as the WUI, critical habitats, and cultural sites. Coordination with Federal, State, and local agencies would minimize smoke in the WUI.

Fire suppression and fuels management activities would minimize impacts on the environment, especially surface water, cultural and paleontological resources, and sensitive habitats. Prescribed fire and smoke management would be consistent with State fire and air pollution laws and BLM policy. Acceptable burn days would be determined in coordination with State and local agencies and would be minimal from April through June.

The Proposed Action would require developing appropriate management responses to wildland fire, reducing human-caused fires, collaborating with communities to reduce fire risk, and prohibiting the use of heavy equipment and fire retardants in natural and culturally sensitive areas. Wildland fire

management goal would be to suppress all fire starts 90 percent of the time before 10 acres are burned, regardless of ignition source.

Non-fire Fuels Management

The Proposed Action would require the HFO to collaborate with Federal and State agencies with wildland fire management responsibilities, Fire Safe Councils, communities, and private landowners, where such interaction would be beneficial, to develop cross-boundary fuels management strategies to reduce the risk of fire.

Post-fire and Non-fire Fuel Treatment Rehabilitation and Monitoring

The Proposed Action would require post-fire and non-fire fuels treatment rehabilitation and monitoring. This means establishing a monitoring system that inventories pre-burn species composition and resulting post-fire response; monitoring the effects of fire/fuels treatment; and adjusting the Hollister FMP as needed.

Monitoring after a wildfire, prescribed fire, or non-fire fuels management treatment would identify the need for rehabilitation action. The need for post-fire or fuels treatment rehabilitation would be considered on a case-by-case basis, depending on location and resources to be protected.

4.17.5.1 Impacts for other Resource Programs

Fire management could result in impacts to other resources, including air quality, water and biological resources, recreation opportunity, and cultural and paleontological resources. These are described in previous Chapter 4 subsections for these resource program areas.

Appropriate rehabilitation and monitoring action would be defined in prescribed fire and fuels treatment plans; however, emergency rehabilitation such as slope stabilization, reestablishment of appropriate native plant species, invasive weed abatement, and/or protection of vegetation and natural and cultural resources may be needed following a wildfire.

Livestock grazing would reduce the accumulation of fine fuels and break up their continuity in grazing allotments, which would have a moderate long-term beneficial impact on fire management in CCMA.

4.17.5.2 Mitigation

Mitigation measures are contained in the management actions in Chapter 2. Measures include prevention strategies, coordination with public agencies, and monitoring. The Proposed Action would require that the HFO comply with new fire management guidance provided by recent Federal wildfire management policy. This guidance includes newly developed fire and fuels management strategies and tactics to comply with the Federal Wildland Fire Management Plan Policy and Program Review (1995 and 2001) and the National Fire Plan: A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy and Implementation Plan (2002). Current Federal policy requires that fire management plans developed for all acres of burnable vegetation on HFO management land comply with these documents and be linked closely with approved resource management plans. This recent policy provides for improved correlation and communication among local, State, and Federal agencies with fire and fuels management responsibilities, which ultimately would reduce the risk of wildfire to life and property and reintroduce fire as a natural component of ecosystems, as appropriate.

4.17.6 Cumulative Effects

The assessment area for cumulative effects for fire and fuels management includes the CCMA itself, and adjacent areas under direct protection of CALFIRE and/or BLM. Prescribed fire and non-fire treatments would provide mosaic patterns of vegetation to protect soil, watershed, and wildlife, and to reduce the risk of wildland fire in the WUI or catastrophic fire. They can also improve rangeland health. These improvements could have beneficial off-site impacts to downstream water quality, vegetation, and wildlife habitat.

Past actions that have affected fire and fuels management include historic farming and grazing practices that have led to the replacement of a majority of native vegetation with non-native species. Past and present management practices have created a road network that is useful for fire suppression activities in the area. Present actions in the CCMA include management activities on BLM lands near Laguna Mountain and on Condon Peak that are similar to the remainder of the BLM lands within the CCMA, including construction of fuelbreaks, prescribed burning, and mechanical treatments including vegetation clearance around structures. Future actions include non-native species abatement and wildlife habitat management efforts that should improve resources conditions throughout CCMA over time. Future development of private land parcels within the CCMA could increase the amount of wildland urban interface in the area, although the human health risks and the difficulty of securing potable water in the area will likely limit the amount of private development.

Plans are currently being finalized to abandon the Beaver Dam Fire Station from the Hwy. 25 location in south San Benito County. This would move two fire engines and a water tender further away from the CCMA and increase response times to the CCMA by over an hour. Based on the long history of mutual aid within California, cooperation with adjoining fire suppression agencies will continue in the future.

Long-term off-site benefits of prescribed fire include reducing the occurrence or severity of wildfire. Appropriate wildland fire and fuels management would reduce the chance of wildfire igniting on HFO land and moving onto private or other public lands. Smoke that occurs with prescribed fire would be managed to meet local air quality standards to minimize impacts on sensitive off-site areas. Hazardous fuels management may reduce particulate matter production, thus minimizing air quality impacts

Adverse off-site impacts could occur if prescribed fire turns to wildfire that may damage cultural and sensitive habitat or result in loss of grazing forage or damage to the WUI. The degree of impact would depend on the type and severity of loss. Forage damage would be a short-term loss, but WUI loss could be long-term in nature and economically costly. Fuels management risks are usually minimal in comparison with prescribed fire because the threat of escape is less. One caveat is that using herbicides can damage non-target vegetation and contaminate surface water.

The interaction of management actions proposed under all the management alternatives, including the Proposed Action, together with other past, present, and reasonably foreseeable future actions were considered in analyzing cumulative impacts. Past conversion of native species to primarily non-native species has affected the overall fire regime, increasing the interval of fire return over natural conditions. Current fire suppression resources, including BLM and CALFIRE, have provided adequate fire suppression protection, which is anticipated to continue in the future. The closure of the Beaver Fire Station would lengthen suppression response times to the CCMA, which may adversely affect fire suppression success. However, this would also facilitate having BLM personnel who are more familiar with the resource management concerns on scene earlier in the fire when planning suppression tactics. Overall, RMP actions, when considered with other past, present, and reasonably foreseeable future actions, are not anticipated to have a significant effect in terms of fire and fuels management.

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4.18 Lands and Realty

For ease of reference, the management goals from Chapter 2 are reiterated here:

- The goal for lands and realty management is to provide lands, interests in land, and authorizations for public and private uses while maintaining and improving resource values and public land administration.

4.18.1 Introduction

Land tenure adjustments and land use authorizations are BLM activities that would occur under the Proposed Action. Alternative A represents the "No Action" alternative required by NEPA, and would reaffirm current management under the existing 1984 RMP (BLM 1984) and its associated amendments (1986, 1999, 2006). All alternatives would maintain existing land use authorizations and rights of ways in CCMA for private land owners, communication sites, and mining claims. The Proposed Action would emphasize protection of human health and safety by incorporating mitigation measures into land use authorizations for rights-of-ways and communication sites in CCMA to reduce exposure to airborne asbestos fibers.

The Proposed Action emphasizes acquisition of lands to support new recreation opportunities in the Tucker, Condon, and Cantua Zones. The Proposed Action would restrict public access and development in the ACEC and only authorize new recreation facilities outside the ACEC. Management actions within the lands and realty program are administrative in nature and require subsequent analysis at the project level to determine site-specific resources issues and alternatives for implementation. Therefore, there would be no direct environmental impacts to the human environment under the Proposed Action or any of the alternatives. Other programs and resources would be affected by failure to complete the required resources screening and analysis prior to any land use authorization, acquisition, exchange, or disposal.

4.18.2 Overview of Impacts from Lands and Realty

4.18.2.1 Lands and Realty Management Actions

Land Disposal, Acquisition, and Exchanges

For all alternatives, direct impacts upon lands and realty program would be administrative in nature. The management actions would assure more efficient management of public lands and greater preservation and enhancement of biological resources in important areas.

Land Use Authorizations

For all alternatives, direct impacts upon lands and realty program would be administrative in nature. The management actions would assure some level of land use authorizations including development opportunities for energy and minerals, utility corridor, wind energy, and telecommunications. The varying degrees of access allowed in the ACEC and elimination of a county road network would directly impact landowners within the ACEC. The BLM would provide reasonable access and the landowners would be required to pay annual rent for their access.

4.18.2.2 Other Management Actions

Overall, impacts from other management actions would primarily be related to land use authorizations. Special areas like WSA's, ACEC/RNA's, or the existence of special status plants or animals, wetlands, and cultural resources, among other things, can limit the availability of those areas for certain land use authorizations like rights-of-ways or energy and mineral development. The potential increase of land use permits for renewable energy development would also increase the administrative burden on the BLM.

4.18.2.3 Mitigation

Mitigation measures for land acquisitions and disposal would be specified in BLM guidance and in compliance with the Federal Land Policy and Management Act of 1976 (FLPMA) and other Federal laws and regulations that address the screening criteria and transfer of contaminated properties. Authorizations and permits would specify site specific mitigation measures to reduce or eliminate potential impacts to air quality, soil, water, biological, recreation, visual, rangeland, energy and minerals, cultural, paleontological, social/economic, transportation/access, hazardous materials, and public safety resources.

4.18.3 Impacts and Mitigation for Alternative A

4.18.3.1 Lands and Realty Management Actions

Land Disposal, Acquisition, and Exchanges

Under the no action alternative, existing management actions would have a minor adverse impact on administration of lands and realty because they would only allow acquisition of lands for efficient management of public lands and to reduce conflicts with other public and private landowners within the CCMA. Land tenure adjustments would be implemented if the FLPMA and other applicable Federal laws and regulations are met, and if the BLM management objectives for the management areas, such as impacts or loss to species/habitats or other resource impacts, are not compromised.

Land Use Authorizations

Management of resources would be maintained at current levels. This alternative would not modify allowable uses to address emerging issues on public lands; however, this alternative would incorporate new human health risk information into BLM's public outreach and education asbestos hazard information program and guidance for management of natural and heritage resource, livestock grazing, energy and minerals, or lands and realty established after the 1984 Hollister RMP, as amended.

Impacts from new activities, expanded rights-of-way (ROWs), or construction of utility sites and related facilities outside of designated or established corridors would vary depending on the approval of applications with appropriate mitigation measures. Similarly, allowable impacts from permit applications for apiary, commercial filming, or other uses would be considered on a case-by-case basis with appropriate mitigation measures. Closing and rehabilitation of roads not required for administrative purposes and resolution of unauthorized uses of public lands would have an indirect impact on other resources; however, such actions would benefit the administrative efficiency of BLM activities. Private landowners would continue to use the BLM and County transportation network to access their private lands.

4.18.3.2 Other Management Actions

As described above, impacts from other management actions would primarily be related to land use authorizations. Under Alternative A, there would be no new areas of special designation (ACEC, Wilderness, etc.) and the existing ACEC and WSAs would remain. This impact on availability of land use authorizations would be negligible, however, because over the next 15 to 20 years, no more than 15 wells are planned to be drilled and a combined total of 74 acres of Federal lands disturbed (includes permanent and temporary disturbance). This estimate is based on oil and gas potential outlined in the Hollister Field Office Reasonably Foreseeable Development Scenario (Appendix VIII).

4.18.3.3 Mitigation

Use permits and requests for ROWs and other uses would be considered on a case-by-case basis, including the level and type of impacts that would require appropriate and applicable mitigation measures.

4.18.4 Impacts and Mitigation Common to Alternatives B and C

4.18.4.1 Lands and Realty Management Actions

Land Disposal, Acquisition, and Exchanges

Under these alternatives, approximately 3,300 acres of land would be available for disposal in the Tucker, San Benito River, and Condon Zones. These lands are currently difficult to manage because they are disjunct from other public lands and have little or no existing public access. Therefore, making these lands available for disposal would have negligible adverse impacts on lands and realty, and moderate long-term benefits for management efficiency because BLM would be able to consider exchange or purchase of lands to acquire inholdings with high biologic, geologic or cultural resource values. In general the public land pattern would be consolidated and access to public lands would be improved.

Land Use Authorizations

Impacts from new activities, expanded rights-of-way (ROWs), or construction of utility sites and related facilities outside of designated or established corridors would vary depending on the approval of applications with appropriate mitigation measures. Similarly, allowable impacts from permit applications for apiary, commercial filming, or other uses would be considered on a case-by-case basis with appropriate mitigation measures. Closing and rehabilitation of roads not required for administrative purposes and resolution of unauthorized uses of public lands would have an indirect impact on other resources; however, such actions would benefit the administrative efficiency of BLM activities Private inholders would continue to utilize the BLM and County transportation network as principle means of access to their private lands. BLM would consider ROW applications on a case by case basis.

4.18.5 Impacts and Mitigation for Alternatives D & E

4.18.5.1 Impacts from Lands and Realty Management Actions

Land Disposal, Acquisition, and Exchanges

Under Alternative D, none of the 3,300 acres in the Tucker, Condon, and San Benito River zones would be available for disposal. Retention of these lands would have minor adverse impacts on management

efficiency and public access because all of these parcels have no existing (or reasonably foreseeable) public access. Otherwise, Alternatives E and F would have the same effects as Alternatives B and C.

Land Use Authorizations

Allowable uses would be somewhat restricted with access limited to the county road system under alternative D. CCMA private landowners would be able to utilize the county roads to drive all or most of the distance to their property The landowners who are not able to drive the entire distance to their private property on county roads would be required to obtain a ROW from BLM for driving on non-county roads across BLM land. Driving on non-county roads would be limited to ingress and egress of private property owned by the ROW holder. Use of the county roads under alternative E would be limited to R11. R11 is that portion of the county road from New Idria straight through to the locked gate accessing Joaquin Rocks. Landowners accessing their property through Clear Creek would require a ROW for all or most of the distance to their private property.

Obtaining a ROW would require submitting a Standard Form 299 "Application for Transportation and Utility Systems and Facilities on Federal Lands" to the Hollister Field Office with a map displaying the location of the private property (including APN) and the proposed route of travel. There are three fees involved for processing ROWs. The processing fee is required to reimburse the United States in advance for the cost of processing the application. The monitoring fee reimburses the BLM for monitoring the construction, operation, maintenance, and termination of the project, including protection and rehabilitation of the public lands involved. The third fee is the annual rent. The Hollister FO would GPS the routes of travel and determine the distance across BLM land. Annual rent is determined by multiplying the number of acres (rounded up to next tenth of an acre) included in the ROW by the rental rate for the appropriate county zone. Approximately 18 private landowners would need to obtain ROW from BLM to access their private lands under Alternative D. Approximately 22 private landowners would need to obtain ROW from BLM to access their private lands under Alternative E.

Example: A ROW 20 feet wide and 5 miles long would be 20 X 5(5280) = 528,000 sq ft/43560(sq ft/acre) = 12.12 acres (rounded up to the next tenth) = 12.20 acres X $46.21(2009 San Benito County Zone 5 rate) = $563.762 (rounded to the nearest cent) = $563.76.

Impacts from new activities, expanded rights-of-way (ROWs), or construction of utility sites and related facilities outside of designated or established corridors would vary depending on the approval of applications with appropriate mitigation measures. Similarly, allowable impacts from permit applications for apiary, commercial filming, or other uses would be considered on a case-by-case basis with appropriate mitigation measures. Closing and rehabilitation of roads not required for administrative purposes and resolution of unauthorized uses of public lands would have an indirect impact on other resources; however, such actions would benefit the administrative efficiency of BLM activities

4.18.6 Impacts and Mitigation for Alternative F & G

4.18.6.1 Lands and Realty Management Actions

Land Disposal, Acquisition, and Exchanges

See subsection 4.18.4.1 above.

Land Use Authorizations

Emphasis would be on authorization of multiple uses outside the ACEC, where appropriate. Allowable use restrictions would minimize exposure to airborne asbestos emissions, reduce risk to public health and safety, and land use authorizations would provide limited resource use or commodity production, as appropriate.

Under these alternatives, private inholders would use the BLM's administrative route network as principle means of access to their private lands. Approximately 24 private landowners would need to obtain ROW from BLM to access their private lands under Alternatives F & G. Obtaining a ROW would require submitting a Standard Form 299 "Application for Transportation and Utility Systems and Facilities on Federal Lands" to the Hollister Field Office with a map displaying the location of the private property (including APN) and the proposed route of travel. There are three fees involved for processing ROWs. The processing fee is required to reimburse the United States in advance for the cost of processing the application. The monitoring fee reimburses the BLM for monitoring the construction, operation, maintenance, and termination of the project, including protection and rehabilitation of the public lands involved. The third fee is the annual rent. The Hollister FO would GPS the routes of travel and determine the distance across BLM land. Annual rent is determined by multiplying the number of acres (rounded up to next tenth of an acre) included in the ROW by the rental rate for the appropriate county zone.

Example: A ROW 20 feet wide and 5 miles long would be 20 X 5(5280) = 528,000 sq ft/43560(sq ft/acre) = 12.12 acres (rounded up to the next tenth) = 12.20 acres X $46.21(2009 San Benito County Zone 5 rate) = $563.762 (rounded to the nearest cent) = $563.76.

Compared to existing conditions, impacts of new utility sites and corridors within existing designated or established corridors would be localized and temporary during construction, but also could be long term and permanent to the natural resources in and near the corridor. These impacts would be mitigated with appropriate measures. Permits for apiary, commercial filming, wind energy development, or other uses would be considered on a case-by-case basis with appropriate mitigation measures. Closing and rehabilitation of roads not required for administrative purposes and resolution of unauthorized uses of public lands would have an indirect effect on other resources; however, they would benefit the administrative efficiency of BLM activities.

4.18.7 Impacts of Lands and Realty for the Proposed Action

4.18.7.1 Lands and Realty Management Actions

Land Disposal, Acquisition, and Exchanges

Under the Proposed Action, 368 acres in the Condon and San Benito River zones would be available for disposal. Retention of these lands would have minor adverse impacts on management efficiency and public access because all of these parcels have no existing (or reasonably foreseeable) public access.

Making these lands available for disposal would have no adverse impacts on lands and realty, and moderate long-term benefits for management efficiency because BLM would be able to consider exchange or purchase of lands to acquire inholdings with high biologic, geologic or cultural resource values. In general the public land pattern would be consolidated and access to public lands would be improved.

Management actions would allow acquisition of lands for efficient management of public lands and to reduce conflicts with other public and private landowners within the CCMA. Land tenure adjustments

would be implemented if BLM management objectives for the management areas, such as impacts or loss to species/habitats or other resource impacts, are not compromised.

Land Use Authorizations

Allowable uses would be somewhat restricted with access limited to the *Scenic Touring Route* under the Proposed Action. CCMA private landowners would be able to utilize the touring route to drive all or most of the distance to their property The landowners who are not able to drive the entire distance to their private property on county roads would be required to obtain a ROW from BLM for driving on non-county roads across BLM land. Driving on non-county roads would be limited to ingress and egress of private property owned by the ROW holder.

Obtaining a ROW would require submitting a Standard Form 299 "Application for Transportation and Utility Systems and Facilities on Federal Lands" to the Hollister Field Office with a map displaying the location of the private property (including APN) and the proposed route of travel. In most cases there would be no fees charged for these rights-of-way for private landowners. Approximately 22 private landowners would need to obtain ROW from BLM to access their private lands.

Impacts from new activities, expanded rights-of-way (ROWs), or construction of utility sites and related facilities outside of designated or established corridors would vary depending on the approval of applications with appropriate mitigation measures. Similarly, allowable impacts from permit applications for apiary, commercial filming, or other uses would be considered on a case-by-case basis with appropriate mitigation measures. Closing and rehabilitation of roads not required for administrative purposes and resolution of unauthorized uses of public lands would have an indirect impact on other resources; however, such actions would benefit the administrative efficiency of BLM activities

4.18.7.2 Mitigation

Mitigation measures for land acquisitions and disposal would be specified in BLM guidance and in compliance with the Federal Land Policy and Management Act of 1976 (FLPMA) and other Federal laws and regulations that address the screening criteria and transfer of contaminated properties. Authorizations and permits would specify site specific mitigation measures to reduce or eliminate potential impacts to air quality, soil, water, biological, recreation, visual, rangeland, energy and minerals, cultural, paleontological, social/economic, transportation/access, hazardous materials, and public safety resources.

4.18.8 Cumulative Effects

Potential cumulative impacts, are expected to be minor, and would largely depend on the sales, exchanges, and acquisitions carried out under this RMP/EIS. For example, acquisitions of areas with high recreation potential could result in moderate beneficial cumulative impacts to recreation and travel management. Additionally, land use authorizations including communications, utility corridors, and energy development, could also result in minor long-term beneficial cumulative impacts to local social and economic conditions.

Cumulative impacts from management of lands and realty under the range of alternatives, and Proposed Action, would benefit other resources, such as aesthetics, water quality, and biological resources as a result of land tenure adjustments and restrictions on land use authorizations. These impacts combined with impacts from previous land acquisitions and improvements, as well as the existing land uses and impacts, would cause localized and permanent cumulative impacts on those resources. These impacts are described in the respective resource section in Chapter 4.